LOUISIANA
Conservationist

MARCH, 1951

L. S. U.
Library
La. Coll.

APR 30 '51

Louisiana

CONSERVATIONIST

EARL K. LONG
Governor of Louisiana

ERNEST S. CLEMENTS
Commissioner

Published Monthly except May, June, July and August, when
Bi-Monthly in the interest of conservation by Louisiana
Department of Wild Life and Fisheries

126 Civil Courts Building, New Orleans, La.

MEL WASHBURN
Editor

Vol. 3 MARCH No. 7

ERNEST S. CLEMENTS
Commissioner

ALBERT SIDNEY CAIN, JR.
Attorney

MEL WASHBURN
Director, Division of Education and Publicity

ARMAND P. DASPIT
Director, Fur and Refuge Division

JAMES N. McCONNELL
Director, Division of Oysters and Water Bottoms

JAMES BROWN
Director, Division of Fish and Game

FRANK COOGAN
Director, Division of Research and Statistics

PAUL A. VOITIER
Director, Division of Enforcement

JAMES NELSON GOWANLOCH
Chief Biologist

Conservation Pledge

I GIVE MY PLEDGE
AS AN AMERICAN
TO SAVE AND FAITHFULLY TO
DEFEND FROM WASTE
THE NATURAL RESOURCES OF
MY COUNTRY — ITS SOIL
AND MINERALS, ITS
FORESTS, WATERS,
AND WILDLIFE

DEPARTMENT OF WILD LIFE AND FISHERIES
DIVISION OF EDUCATION & PUBLICITY

Entered as second class mail matter August 21, 1947, at the Post Office at New Orleans, La., under the act of August 24, 1912.
Member, Southwestern Association of Industrial Editors

Permission for publication of all material in this issue is granted on condition that we receive marked copies and that credit is given for any illustration reproduced. Contributions and photographs will be welcomed. Manuscripts should be addressed to Editor, Louisiana Conservationist, 126 Civil Courts Bldg., New Orleans 16, La. The Louisiana Conservationist is always interested in pictures of game and fish catches, unusual hunting and fishing scenes, bird dogs, and in group pictures of hunting and fishing organizations.

Vol. 3, No. 7

EDITORIAL

MARCH, 1951

IN THIS ISSUE

◆

LOUISIANA'S FISH LINE IS LONG
By Mel Washburn

◆

GRANDPAP TOLD ME
By Roger M. Latham

◆

ROLL YOUR OWN EARTHWORMS
By James Nelson Gowanloch

◆

FACE UP THE FUTURE
By Johnny Mock

◆

FISH POND MANAGEMENT
By James Nelson Gowanloch

◆

FEED 'EM AND SAVE 'EM
By Henry P. Davis

COVER

Spring fever is in the air and along every brook, so our artist is most timely with his own interpretation.

By Ernest S. Clements

Commissioner of Wild Life and Fisheries
of Louisiana

GREAT STRESS is being laid by sincere conservationists in Louisiana today relative to the protection and perpetuation of this state's great wealth in natural resources. Louisiana's timber, oil, gas, sulphur, wildlife and soil conservation are vital and well exploited links in this state's chain of fabulous riches, and expansive programs are being used to acquaint the people of this state with the necessity for restoring and conserving the great wealth that came too near to total dissapation. And it is all a fine thing . . . a commendable thing. But how many have taken stock of another fabulous resource that belongs to Louisiana . . . our commercial fisheries.

How many Louisiana men and women have even the slightest knowledge of the magnitude of this state's fisheries industry. Did you know that it is worth approximately $30,000,000.00 a year? Did you know that this is an industry in which $49,508,000.00 in equipment and materials is needed if it is to be carried on successfully? Did you know that about 115,000 persons are dependent on Louisiana's fisheries for a livelihood, and that it employs approximately 30,000 men annually? These are fabulous figures, certainly, but they are true figures and they represent in statistics what the commercial fisheries industries means to each of us in Louisiana each year.

Of course the next question is obvious. Is such an industry worthy of every phase of protection?

The next time you are tempted to complain because the season has been closed on shrimping in order to permit unhampered spawning . . . the next time you hear complaints because certain oyster reefs have been closed for a stipulated period to permit growth of the young oysters . . . the next time you hear of certain coastal waters being closed to fish seining or trammel netting, so that spawning fish may be protected, think of what could happen to our shrimp, our oysters and our commercial fish if the 30,000 or more men who make a living taking them from our waters, were permitted to seine, trawl and dredge, unrestricted by regulations, unmindful of the damage they would do, and heedless of the need for regard for the future. Just how long, under such conditions, do you think Louisiana would continue to have a 30-million dollar fisheries annually?

Figuring four persons to each family it has been estimated that there are 115,000 persons directly dependent on our fisheries for a living, but that is only the fore-rank of the dependent list. What about the families of the men who provide the machinery, who build the boats, manufacture the ropes and twine, the coopers who make the barrels, the men and machinery needed to build docks and roads, the laborers and skilled mechanics who provide the fuel, and the thousand and one other things that are needed to keep this industry flourishing.

Haven't you by now come to the conclusion that no matter how rigid the restrictions must be sometimes, they MUST be imposed? Are you still of a mind to sympathize with the selfish and greedy ones who would wreck such an industry in their grasp for the few more dollars they might make by rank violation of conservation laws?

If such an industry is to be perpetuated it must be protected. And it is a sad thing to contemplate that it must be protected from the very ones who derive the most benefit from it. That's what makes the job of fisheries conservation such a thankless one. But when every man who makes a living (and some of them make fortunes) taking Louisiana's shrimp, fish, oysters, crabs, frogs and shells from our waters, realizes that this industry will continue and prosper only so long as it is protected from dissapation, then, and only then, will we all be doing our full duty in conserving that which God has bestowed upon us so bountifully.

DO YOU LIKE PICTURES?

So do we! Hunting pictures . . . fishing pictures . . . pictures of the game you bagged . . . pictures of your dogs . . . pictures of yourself or your friends on a hunt or fishing trip . . . in fact any kind of good pictures that have a bearing on field or stream sports.

Mail them to EDITOR, LOUISIANA CONSERVATIONIST, 126 Civil Courts Bldg., New Orleans, and we'll return 'em to you as soon as we've been able to use them.

LOUISIANA'S FISH LINE IS LONG

Pelican Anglers can go third of way around the world along this state's coast in their quest for piscatorial thrills, if they follow our 7,721 miles of shore line.

By Mel Washburn

Director, Division of Education and Publicity, Department of Wildlife and Fisheries

Photo by Edouard Morgan

A. E. Augustine, state senator of Iowa, had always dreamed that someday he'd go deep-sea fishing, so when the Iowa Legislature took a recess last month, Senator Augustine and G. T. Van Houweling, a fellow townsman of Oskaloosa, Iowa, flew to New Orleans, and then went to Grand Isle. Here pictured is the result of their first day's fishing in the Gulf, even to Senator Augustine's "double-header" silver trout.

WHEN you say, "let's go fishin'" in Louisiana, its never a case of where can we go, but when can we go. In this state there's water most anywhere, and wherever there's water there's pretty liable to be fish of one kind or another. Perhaps that's why there are still so many people in Louisiana who, despite the fact they have lived all their lives so near the Gulf of Mexico, have never indulged in salt-water fishing.

Of course its hard to convert the dyed-in-the-wool bass or sac-a-lait fishermen to salt-water fishing as a sport, and it is equally as hard to get fishermen from the hinterlands to journey to the Gulf Coast when they have oodles of fine fishing right in their own back yards. But the fact remains that there is a wealth of fishing sport in Louisiana's salt water that is unequaled anywhere in the world. And there's no particular season, no creel limit and nothing else, except possibly the weather to hinder anyone from a full enjoyment of piscatorial pleasures, anytime in the year.

Louisiana has approximately 985 miles of coast line when you take into consideration the bays and bayous, and from this coast line out, there are millions upon millions of square miles of open sea in which there are infinite millions of fish. Quite a tempting thought, isn't it, if its fishing you want with an almost certainty that it'll be fish you'll get. Nor is there any limit to size, except the one you impose on yourself by the stoutness of your tackle.

It is a well known fact that when you wet a line in Louisiana's salt water you have no more idea than the man in the moon what may attack your lure.

But no matter what "strikes", you can be pretty sure of a thrill. Some sportsmen have made as much an art of salt water fishing as the bass fisherman in our fresh water, and for that matter there are plenty of bass caught in the salt waters of Louisiana's tidal marshes and lakes. Generally however it is the speckled trout (weakfish) that gets the biggest play, with the redfish, croaker, sheepshead, drumfish and channel mullet that prove the most attractive to the average fisherman. No doubt this is so because there is almost always a generous supply of bait available such as live and dead shrimp, crabs, minnows and even cut meat, to say nothing of the hundreds of types of artificial lures that have become so popular of recent years. In fact the tackle box of a salt-water fisherman is as crammed full of assorted gear as that of the most ardent fresh-water expert. And it is also a known fact that as the salt-water fisherman develops his desire for bigger and better thrills his catches show an amazing increase in size, both as to individual fish and to numbers.

Keeping a record book on the many species of fish native to Louisiana's coastal waters is virtually an impossible task. Before such a book could be published, containing all the known kinds of fish, there are certain to be new ones captured, new methods for fishing evolved, and new fishing grounds discovered. Nor will there be a quick end to these discoveries. The generally accepted 985 miles of coast lines for Louisiana, pales considerably when you consider the actual coast line mileage of 7,721 miles. Yes, that's right, seven thousand, seven hundred and twenty-one miles of shore line, which, of course includes the bays, sounds and other bodies of water included to the head of the tideland waters, or to a point where such waters narrow to a width of one hundred feet.

And every drop of it is good fishing water . . . good for a thrill any time the weather is right and you use the right kind of bait.

Some men would rather fish for speckled trout than anything else, and have made it a real science. They know just where the best reefs are, the best grassy points, and in colder weather the best deeper sand-covered bottoms. Others get the biggest thrill in battling the belligerent redfish, especially in the colder months when the "bull reds" are plentiful and available. Hook a 10 to 15-pound red on light tackle and you've got as sweet an angler's battle as you'll ever want to find.

Some men (and women, too) are particularly adept at fishing the wily sheepshead and amazing catches of this delectable fish are recorded almost every week in the year. Novices, however, don't do so well fishing for sheepshead as a rule. You've got to know the feel of their "bite" and even then you've got to know just how hard to set the hook. It's a lot like easing a long putt over a rough green on the golf course. You've got to have the know how.

So much for the general run of fishing in the coastal marshes, bays and lagoons. It's the kind of fishing that attracts thousands every day, and it is the kind of fishing, too, that whets the appetite for more, but that is only one phase of salt water fishing as it is enjoyed along Louisiana's fabulous coastal miles.

All this is sport fishing, to be sure, but it is not THE sport fishing. There are the thousands who fish for the thrills and care nothing for the food angle. The tarpon fishermen for instance. They're the hardy sportsmen who'll troll a lure all day in the hot sun in the hope of at least one strike, and they're liable to get that strike almost anywhere on the Louisiana coast. These are the class of fishermen who have made the fish rodeos more popular each succeeding year . . . the fishermen who angle solely for the thrill of the sport.

Then, too, the tarpon fisherman is in constant expectation of other thrills. The lure he trolls for the "grand ecaille" (silver kind or what have you) may just as well attract a jack crevalle, a cobia, a king mackerel, a bonita, dolphin, a shark, or perhaps, as has been the case in some instances, an entirely new species of game fish. That is, new to this part of the Gulf Coast, like the sailfish, the broadbill, or in extremely rare instances a marlin. The fact that these choice specimens have been caught only rarely in Louisiana's coastal waters does not signify that they are not there in plenty, but only that the fishermen have been unaware of them, and have not been using the proper lures in the approved manner.

Only in the last decade has it been discovered that there were "snapper banks" within sight of land off Grand Isle. Explorations for oil and the erection of drilling rigs revealed coral reefs only a few miles off the Grand Isle shore, and almost at once the charter boat business became an active and profitable industry with full schedules of fishing parties daily. These fishermen almost always come in with their fill of snapper fishing and their hampers filled with red snapper, grouper, sheepshead, blue fish, spade fish, silver trout, trigger fish, and the giant jew fishes, the bulls of the deep and the despair of improper tackle.

Any Special kind, Dear?

In fact the charter boat business at Grand Isle has cut deeply into the former speckled trout and redfish angling in Barataria bay and around the island. The expectant anglers now have only one thought in mind . . . getting out to the oil rigs and piling up an amazing catch. It has become an almost daily occurrence for these boat-loads of fishermen to come in with several hundred fish as the result of one day's angling.

This charter boat fishing business has had another effect, too. It has almost entirely de-glamorized the succulent pompano, here-to-fore looked upon as the last word in fish edibility. With excursionists, many of whom had never before dropped a hook into salt-water, coming in after a day's fishing on the reefs around the oil rigs, with dozens and often hundreds of fine pompano, this prized gourmet's pet has become almost as common on some tables as speckled trout or croakers.

Spanish mackerel, king mackerel, blue fish, bonita, dolphin and many others prove exciting quarry for the fishing excursionists on their way to and from the oil rigs, as they experiment with various artificial lures, so that not one minute is lost of their day "at sea". Small wonder the charter boat business has grown so amazingly in the last decade, and as it has grown the size and quality of the boats have developed, too, until now these craft-for-hire are the last word in comfort and convenience for the fisherman or fisherwoman. And don't think the women anglers on such excursions are not increasing as rapidly as the male bait manglers.

Each year finds a number of new marine specimens added to the catalogue kept by the Louisiana Department of Wild Life and Fisheries, and makes it an almost necessity to keep constantly revising the "fish book" of this great state.

Probably no other one piscatorial activity has been so prominent in this discovery of new specimens as the fish rodeos that are becoming more numerous and popular each year.

One of these in particular, the Grand Isle Tarpon rodeo, which will be staged this year on July 19, 20 and 21, at Grand Isle, has brought to light at least two specimens of barracuda, thought to be non-existant along the Louisiana coast. In fact so many different kinds of fish were recorded by the tarpon anglers during this annual rodeo that of recent years it has been necessary to change the event from a contest in which tarpon alone were the prize, until now there are first, second and third prizes awarded for 13 various kinds of fish, and who can tell when there may have to be added even more game fish classes to the prize list.

Add to all these possibilites for grand sport for the salt-water fisherman, the fact that there are no bedevilling restrictions of angling in Louisiana's coastal waters, no closed seasons and no creel limits, and you can readily realize the satisfaction that sports fisherman find in the pursuit of their favorite finny quarry.

Not only are there no closed seasons, there are no seasonal restrictions. You may fish every day of the year off Louisiana's shore line and be reasonably sure of some success. As a matter of fact the art of surf casting has increased amazingly

(Continued on Page 24)

Earl C. Necessary, Vice-President of the Rod and Gun Club, of Jennings, La., and Homer Gray, of Decatur, Ill., with a 46-pound catfish caught in Lacassine Bayou.

CATCH YOUR OWN FISH — ROLL YOUR OWN WORMS

By James Nelson Gowanloch

(Chief Biologist, Louisiana Department of Wildlife and Fisheries)

DIGGING earthworms for fishing has been or should be part of the childhood pattern of almost everyone. Condemned as is their use by many sportsmen, they are nevertheless ideal for catching certain panfish. The writer many years ago had in his university classes a student who declared that his father actually refused to attend the funeral of an old and fond friend because that friend committed the infamous sin of catching brook trout with worms.

Biological readers may remember that Charles Robert Darwin, of the "origin of species" fame, wrote his last famous book on the subject of the part that earthworms play in cultivating soil and making better garden conditions. Earthworms are commercially reared and sold now quite widely for this precise purpose.

It is the purpose of this brief account to set down some statement of how the interested fisherman can rear worms and obviate the job of getting up at the crack of dawn to dig them. Hereinafter will also be listed several important publications that will provide a wealth of information concerning earthworm culture.

Some remarks on holding to two other types of bait, i.e., crickets and Catalpa Worms are also given. Particularly comprehensive and recommended is the bulletin by Dobie, Meehan and Washburn cited below.

A considerable number of species of earthworms are natives of the United States and, in addition, many foreign species, particularly ones from tropical lands, have been intentionally or inadvertently imported with potted plants. Christopher William Coates, the Curator and Chief Aquarist of the New York Zoological Society Aquarium at the Zoological Park (the Bronx) has had high success in raising earthworms, which are needed in great quantities to feed the highly voracious Duckbilled Platypuses, now one of the star exhibits of the collections there. In recent correspondence, he writes:

"We have been muddling with a variety of earthworms of one sort or another because these Platypuses of ours are peculiar in their approach to the subject. They will not eat manure worms, or anything derived from them such as soilution worms of most of the worm farmers; they will eat, for a day or two, night crawlers, and then want something else; they will also eat the English garden worm for not more than one or two feedings, but they will eat another species of worm, found in our park, indefinitely. We call this the fighter worm, because it is highly active and jumps around a good deal—if you can conceive of such a thing as a jumping worm—and turns out to be originally an oriental worm of the genus *Pheretima.*

"Brandlings, manure worms, or soilution worms, which are all the same thing, we turned out by the million on a diet of junk—restaurant scraps, coffee grounds, decayed fruit, condensed milk, Pablum, corn meal—almost anything, including old newspapers and clothing, mixed with any old soil, manure, and straw, kept moist at a temperature of 66° F.

"The English garden worm seems to do best on simple soil and leaf mold, mixed with handsfull of grass cuttings. This doesn't breed as rapidly as the last group, nor as prolifically, and is too small to be of much use to our cockeyed beasts.

"Night crawlers will live on a food mixture similar to that provided the garden worm. They take a great while to mature, however, and rarely breed in captivity, so that while they have bred here, we do not consider this particular part of our venture successful.

"The leaf worms, of about the same size as the night crawlers, and so convenient as food, breed a little more rapidly than do the night crawlers but still take six or seven months, too long, to reach feeding size. Their medium is ordinary soil upon which is laid elm leaves to a thickness of four or five inches, all kept moist at about 66°. This mass of leaves will be reduced to a humus kind of soil in a month or so and must be renewed. Our specimens will eat no other kind of leaves and we have been in trouble with spraying for the Dutch Elm disease, the spray remaining on the

Tom Huffman, of Pineville, Rapides parish game warden, with a nice lot of bass taken out of Cedar Lake, proving Tom can catch fish as well as fish law violators.

leaves in sufficient quantity to ruin the worms.

"Our pits are constructed of concrete floors and cinder block walls. The latter are very important, we have found, since they provide for the seepage of excess water while keeping the worms and soil from escaping. The proper amount of moisture is of course a vital factor in raising earthworms; they should be damp at all times but never waterlogged. Temperature, too, is important. We have found that earthworms do not thrive at temperatures much below 65 and above 75 degrees Fahrenheit.

"We have been importing a worm similar to the leaf worm, also identified as *Pheretima,* which turned up in Florida. This is also fed on great quantities of leaves of whatever kind seems most prevalent there, but we haven't been able to find out what it is."

This competent scientist has also kindly provided the writer with some of the references listed below, together with the names of several sources of commercial dealers in these commodities. Names of such dealers will gladly be provided by the author of this discussion on request made to him at the Louisiana Department of Wild Life and Fisheries.

Useful directions for garnering the common *Lumbricus,* which are usually called "Night Crawlers," are given in "Culture Methods for Invertebrate Animals":

"Specimens of *Lumbricus terrestris,* the common earthworm of the United States, must be gathered at night and preferably between 10:00 and 12:00 o'clock during or following a drizzling, warm rain when the ground is thoroughly soaked. The worms come to the surface of the ground in large numbers at such times and may be captured easily with the assistance of a strong flash light or an acetylene lantern. The best collecting grounds are closely cut lawns where the soil is rich.

"When the worms have been collected they may be left for the remainder of the night in a cool place in a pail containing a small quantity of freshly cut grass. The next morning the worms should be carefully sorted, and all injured or abnormal specimens should be removed. If they are washed and placed, a few at a time, in a dish of water those that are injured may easily be detected.

"Earthworms feed very largely on dead and decaying leaves and, like chickens, they digest their food better if there is a certain amount of grit in their diets. We have obtained best results by keeping earthworms in large boxes filled about 12 inches deep with approximately equal parts of old leaves and leaf loam gathered in the woods. Under no conditions should heavy clay soil be used. The worms need no other food, as they feed on the dead leaves. The material should be kept moist but not saturated with water. Unless extreme care was exercised in removing all injured worms, the boxes should be inspected after a week and all dead and dying worms removed. Should it happen that the worms are not keeping well those that are healthy should be removed and placed in a fresh box of leaves and loam.

"Earthworms also keep well in very light, loamy soil. If this is used it is often advisable to feed the worms. Bread crumbs or corn meal make excellent food. The food should be moistened with water, spread sparingly over the top of the soil every 2 or 3 weeks and covered with about an inch of loam. Feed sparingly and not too often or the food will spoil and the worms may die.

"Avoid trying to keep too many worms in one box. A cubic foot of culture material, after it has settled, will be sufficient for about 50 worms. Cover the boxes with panes of glass and keep cool. Temperatures above 60° F. usually prove fatal.

"While cocoons of this earthworm are not easily obtainable, a few of them may usually be found by carefully sorting over the loamy material in the boxes after the worms have been stored in it for a month or so. The young worms emerge from the cocoons in a few weeks and thrive under the same treatment as that given the adults."

Allolobophora foetida is one of our well-known native earthworms that is particularly useful for fishing purposes because of its high activity.

The technical name of this species is highly confusing since it has undergone many changes, being formerly called *Eisenia* and, also *Helodrilus.*

The following precise directions for rearing this species are quoted from "Culture

(Continued on Page 18)

GRANDPAP TOLD ME

By Roger M. Latham

A GUY gets around quite a bit when he works for a Conservation Commission, and in the course of his work he gets to talk to a lot of men—young and old, real woodsmen and raw tenderfeet, city dwellers and country folks. You're supposed to be an expert on wildlife and all Nature when you are a Game Commission employee, and everyone who asks you a question expects an immediate and full answer.

For instance, the other day I stopped at a small house back in the hills of south-central Pennsylvania to ask about the bobwhite quail on the farm. A boy of about twelve or thirteen was sitting on the porch and had parts of an old fishing reel scattered all around him. After I had introduced myself and asked him a few questions about the bobwhites, I was about to leave when he suddenly asked: "Say, how's come you put out these here ringnecks that eat every baby rabbit they come across?" I said, "Who told you ringnecks do that?" He answered "Grandpap told me!" I explained how rabbits often nest successfully in the holding fields at the game farms where a thousand or more ringnecks may be crowded into one field, and how, in the better pheasant range of the state, some of the best rabbit hunting can be found where ringnecks are the thickest. "Of course," I pointed out, "like chickens, pheasants will probably kill and even eat tiny nestling rabbits if they happen to find a nest where the young are exposed. But certainly, they don't go around hunting rabbit nests like an old crow does in the spring and early summer. Chances are, most of the few baby rabbits which are killed by pheasants would have been taken by something else anyway because of their exposed position."

Whether he had more faith in me or in his Grandpap I never found out because he changed the subject suddenly and popped this at me: "Grandpap says the reason you can't find very many deer horns in the woods is because they eat them as soon as they drop off. Is that so?" I was on the spot because I had to be diplomatic enough not to make Grandpap sound too foolish and yet try to answer the boy's questions truthfully. "I believe your grandfather was thinking about the caribou when he was talking about deer eating their horns. These big deer of Alaska and Canada may eat their antlers but our own whitetails don't. However, porcupines, squirrels, snowshoe rabbits, and mice will eat at them apparently to get some of the minerals they need. Some fellows who go out into the woods a lot during the winter find quite a few, and I know one man who has several bushel baskets full in his garage."

At this point he interrupted and called at the top of his voice: "Hey, Grandpap, the 'Game Commissioner' is here and he says deer don't eat their horns like you said." I gulped a couple of times, as I heard somebody stirring around in the house, and realized that now I was in for it. Grandpap came stomping out muttering "Game Commissioner, eh?" Remembering that some general once said that the best defense is to attack, I walked up to him, held out my hand, and introduced myself before he cold say another word. Then while he was still off guard, I said, "I was just going to tell your grandson about the young bucks we had in pens up in Lycoming County. Some of them had as many as eight points the first year they had antlers, and we've found out since that some of our yearling bucks in the wild are tenpointers." This must have been startling news because I heard him mumble "Well I'll be dad-burned!"

Retaining my tactical advantage, I continued, "Of course that rules out the old belief that a buck started with spikes and then added two points every year until he reached full growth. Actually an old buck, particularly if he isn't too well fed, is likely to have less points than when he was younger. A ten or twelve year old buck may even have spikes. Each year the hunters kill one or two does with antlers, too. Apparently the ovaries of these does have been injured or diseased and no longer function as they should."

The old man shook his head slowly. "It's funny how durn many things we've always thought were so, and then when you come to find out they just ain't."

"That's why the Game Commission maintains a research staff," I explained, "to find out the truth about our game and its management. The Commission can't afford to take a chance on information collected through unscientific observations. In fact, one of the hardest jobs they have is trying to convince hunters that many of the things their fathers and grandfathers believed are not true at all. For instance, many of the people of this state still think every hawk and owl is a bad one and should be killed at every opportunity.

"From our studies we know that some of these hawks and owls are worth their weight in gold to the farmers and sportsmen. One barn owl will probably kill more rats and mice around the farm than a dozen cats, and, unlike the cats, it seldom takes a piece of game. Barn owls will kill, on the average, over 4,000 rats and mice a year. You may wonder how the hunter benefits from this. Well, certain mice like the deer mouse may store as much as a peck of seeds in some old stump in the woods. These seeds would have made good grouse, quail, and squirrel food if the mice hadn't stored it away. Think how much food the hundreds of thousands or millions of mice take from our game each year! Our hawks and owls by keeping down these rodents may be doing much more to save game in this way than we ordinarily appreciate."

"Tell me," he said, 'how's come an old fox that's feedin' its younguns in the den will go right past the closest flock of chickens and raise Ned with a flock a half mile or a mile away?"

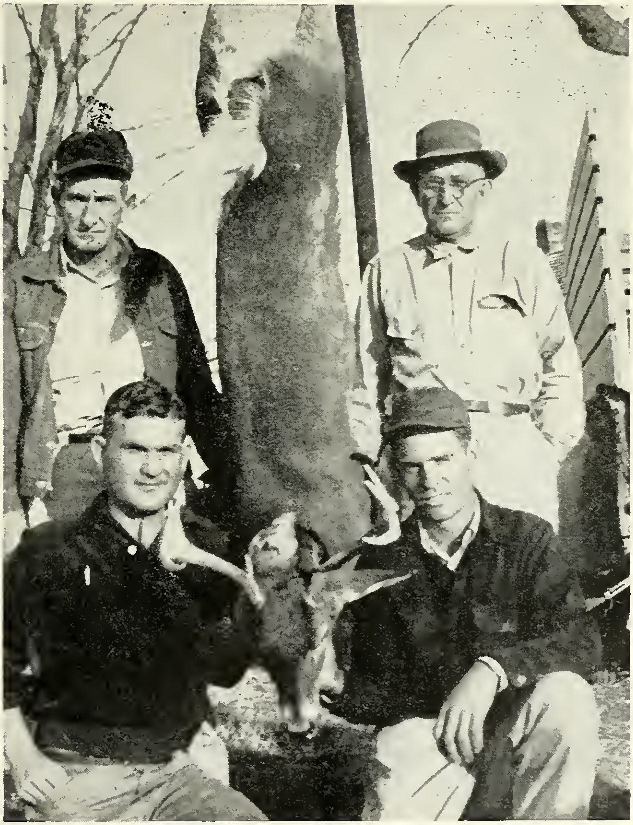
To this question I answered that as far as I knew no one knows exactly why a fox will appear to do that. Some people like to think that a fox is just that smart and that they realize that if they took chickens near the den it would be a dead give-way. By going to a neighboring farm at some distance, it becomes much more difficult for the irate farmer to locate the den and perhaps destroy the pups. Even though the fox is noted for his cunning, it is doubtful whether it is that intelligent. In fact, there are as many cases where they do take the nearest chickens as where they hunt farther afield. There is a good possibility that there may be more human activity around one farm than another, or it may be that the fox had an unpleasant experience or two at a particular farm which he hasn't forgotten. A farmer's dog might have chased the fox away the first time it tried to steal a chicken, and it figured that there was a good place to stay away from.

I told him about the poultry raiser in Chester County who surrounded his range field with a ring of dog houses with a good big dog tied to each. Even though these dogs were tied only a few yards apart, it was no time until the foxes solved the problem and began to carry off the young chickens in broad daylights. In spite of much fierces barking and lunging against the chains by the dogs, these clever red foxes would enter the field at a point half way between two dogs and nonchalantly go about their filching.

I said "Did you ever see a fox carry a big rooster or a turkey?" He shook his head. "It grabs them by the neck and, with a deft toss of the head, throws the body across it shoulders and trots off with it bouncing on its back. That way a fox can carry a bird which weighs almost as much as it does to the den perhaps a mile away." Again I had the satisfaction of hearing him say, "Well I'll be dadburned."

There was a fairly long pause as Grandpap and the boy seemed to be mulling this information over in their minds. The boy's mouth was wide open and I wondered how long it would be before one of the many flies on the porch flew into it. Finally Grandpap sort of shook himself out of his

(Continued on Page 22)



Buck taken on Christmas day in Madison parish by (standing-left to right) J. H. Thomas and Ben W. Thomas, and kneeling (left to right) Edward and Mack Thomas, all of Oak Grove, La. The buck, a 10-pointer weighing more than 200 pounds, was killed by Mack Thomas.

LAKE MANAGEMENT

By James Nelson Gowanloch

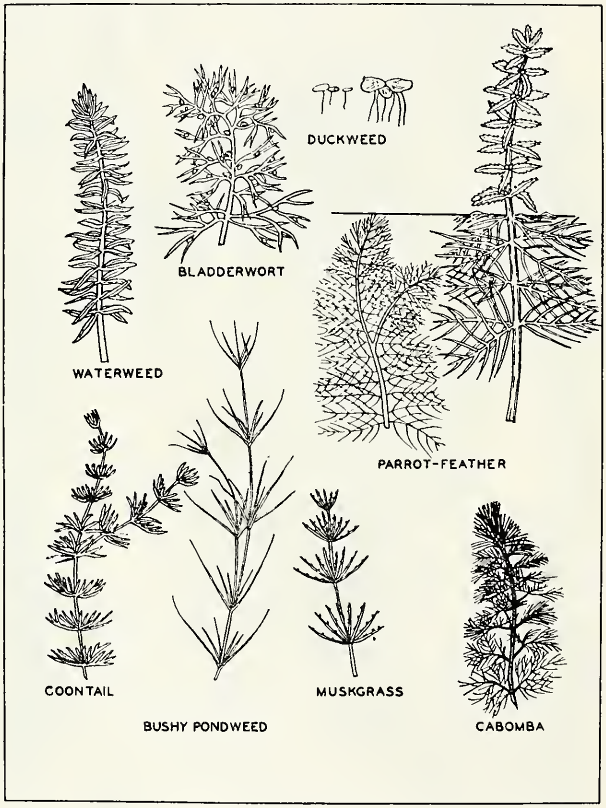
(Chief Biologist, Louisiana Department of Wild Life and Fisheries)

THIS is the second part of a discussion of some of the problems of lake management in Louisiana.

Constituting an important part of Commissioner Ernest S. Clements program for game and fish restoration, lake management involves intricate problems. No two lakes are the same.

In the brief space available, it is possible to convey, it is hoped, some broad idea of how the fisherman's success must in the end depend upon scientific control of the often completely ignored factors that make a lake successful or unsuccessful to the sportsman.

Commissioner Clements has fully supported a program of lake investigation, the accumulating information of which will be freely made available to anyone who desires it. As indicated at the end of this article, special information will be provided on request concerning various aspects of making fishing lakes good fishing lakes. This is particularly necessary because, in the first place, lake management was pioneered in the North, where conditions were so unlike those of Louisiana, that the application of methods devised there were useless in the Deep South.



The above illustration shows the general appearance of some of our commonest aquatic plants with finely divided leaves. Further detail of the diagnostic leaf formation can be found in the other set of illustrations reproduced with this article. Following are the common and technical names: Waterweed (Anacharis, formerly called Elodea); Bladderwort (Utricularia); Duckweed or Duckmeal (Lemna and other genera such as Wolffiella); Parrot's Feather (Myriophyllum) (Note the completely different structure of the leaves that emerge above the water surface.); Coontail (Ceratophyllum); Bushy Pondweed (Najas) (Very many species of pondweeds occur, differing profoundly in leaf size.); Muskgrass (Chara); and Cabomba, popularly given in Louisiana the meaningless name of "Water Moss." (After Marion Toole).

The writer, with his assistant, Harry E. Schafer, Jr., is now engaged upon, as one of his responsibilities, this program of rehabilitating Louisiana lakes and improving their catch. It must be again repeated that these problems are so complicated that it is utterly impossible to set down any blanket answer. Each lake is a lake onto itself.

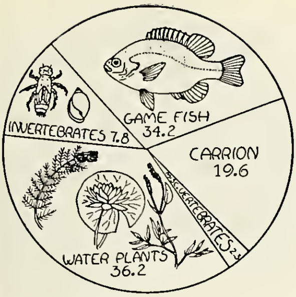
It should, however, be made clear that Commissioner Clements is supporting and is deeply interested in this program, out of which already have come new, practical and useful techniques never before utilized. This will inevitably give information that individuals can use in solving their own problems and information that will provide a broad pattern for Louisiana lake control. Scientific equipment of extreme accuracy, much of which has never before been used in the Deep South, has been acquired, is in use and will provide many answers to many questions.

The problems of plant control hereinunder discussed are many. The writer, under the direction of Major James Brown, Director, Fish and Game Division, had the responsibility for the scientific direction of an extraordinary successful attack upon one plant problem, namely, the control of water hyacinth.

The writer particularly wishes to point out here that the North and South differ greatly in fish hatchery problems.

Fish hatcheries on the whole are not at all similar in character in the Deep South to fish hatcheries in the North. It is not practical to "strip" our southern game fish and rear them artificially, as is the practice with many northern game fish. Instead, the fish are reared in ponds instead of (as is the case of Brook Trout and Northern Pike) in hatchery glass jars and thus the great expense of caring for and feeding these fish is eliminated.

Furthermore, due to the vacillations of the vast Mississippi, an incalculate number of valuable game fish are delivered free of charge at the sportsman's doorstep. When the Mississippi recedes, these fish, which would otherwise die, are now saved for the sportsman. As part of Commissioner Clements' restoration program, Major James Brown has been carrying out unprecedented fish rescue operations utilizing the very latest techniques which involve, among other matters, the use of six of the most efficiently designed fish rescue trucks. Major Brown has, within the three years



Graphic analysis of the food of one hundred and eighty-six Common Snapping Turtles. Note the high destruction of game fish (over one-third of total food). (After Lagler).

of Commissioner Clements administration, distributed in Louisiana fishing waters over five million fish. These are not newly hatched fish. They are fish that are already well along in growth or, as is true, many thousands of them already of legal fishing size. They have come through successfully the dangerous parts of their lives without a penny of cost to the State of Louisiana. Again, reference is made to the fact that inquisitive and ambitious students of lake management will receive on request specific bibliographies on special fields of lake management as are indicated at the end of this article.

Age and Growth of Fish

The determination of the age of fish in relation to size, availability of food, lake temperatures and especially the growth rate in precise lakes forms one of the fundamental problems of lake management.

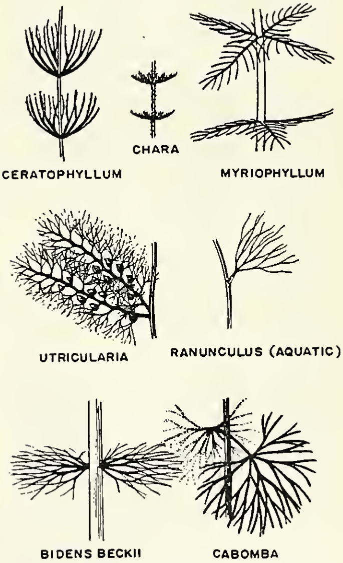
Fortunately, fish tell their age in at least three ways: first, their scales, earliest and still most used method; second, their ear stones (otholiths); and, third, and most recently developed, the rhythmic growth of the button-like central part (centrum) of each segment of the backbone.

It has long been known that trees in response to seasonal growth lay down concentric, readable rings, wider in summer when growth is rapid, narrower when the lower temperatures and slower growth of the winter season become so close to each other that they form a definite ring marking, under most circumstances, each year.

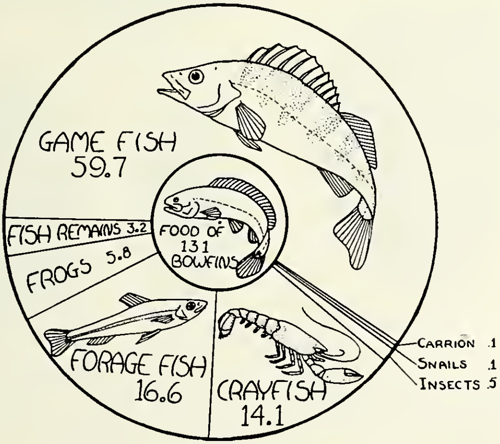
A fish scale is a complicated structure (as a matter of fact, fish scales are actually the structures from which those later animals, the birds, derive their feathers and from which we human beings derive our thirty-four teeth.) Fish scales are widely variable in appearance, depending upon the group of fishes or the precise species of fish that grow them, but they are fundamentally alike in basic structure. This is no place in which to set down these wide differences. Their range may be realized by referring to the accompanying illustrations, each of which is exactly identified.

Contrary to popular belief, many fishes regarded as scaleless actually possess deeply buried scales such as the common eel. Scales may be imbricated, i.e., overlapping like the shingles on a roof. This is one of the most common patterns. In such instances, part of the scale is buried and unseen, part exposed and overlapping. Oddly enough, no fish has more scales than it started out with. Loss of a scale leads to regeneration or deep wounds to scar tissue eliminating scale development.

Ordinarily, a scale consists essentially of a center of growth surrounded by added growth at the scale edge in the form of rings, termed circuli. The illustration shown of the White Bass clearly reveals that in some cases these circles (circuli) can become almost square. Each such scale addition laid down depends in size upon the rapidity of growth of the fish which in turn depends on a number of factors such as temperature, food supply and vitality. Because of the greater temperature differences that occur in the North, scales are much more easily read. However, even in



The finely divided leaves of some common aquatic plants. These should be used in conjunction with the other set of illustrations which gives the more general appearance of the plant. Leaf details shown here will permit even an amateur to identify these plants in broad terms. These leaf forms are adaptations developed for underwater life by these widely unrelated species. All of them are frequently known by the vague term "water moss." The following are the technical and the equivalent common names: Ceratophyllum (Coontail); Chara (Muskgrass); Myriophyllum (Parrot's Feather); Utricularia (Bladderwort); Ranunculus (Aquatic) (Water Buttercup); Bidens beckii (Aquatic Beggartick); and Cabomba (commonly called "Water Moss"). (After Martin and Uhler).



Explanatory of one useful graphic method whereby food habits of fishes can be represented is the above illustration based upon the examination of one hundred and thirty-one specimens of Bowfin, which we in Louisiana know best as the Choupique. The circle is divided quantitatively to show component parts of elements of the Bowfin's average diet. Thus at a glance can be estimated the place of the Bowfin in nature. (After Lagler).

A "regenerative" scale from a Yellow Bass (Morone interrupta), a common Louisiana fish. This represents replacement of a lost scale and shows abnormal pebbly central area, useless for age determination. (After Carlander).

the Deep South by application of precise techniques, it is possible to determine these yearly "growth rings." The scales may be examined directly after being scrubbed and otherwise prepared, or by newer techniques, a more useful examination may be made of the impression of the scale in a plastic rather than the original scale itself.

The following figures derived from commercial fish taken in Cross Lake, Caddo Parish, illustrate the age in years, length in inches and weight in pounds of the Big-mouth Buffalo:

Age in Years	Length in Inches	Weight in Pounds
4	23″	8 lbs.
7	30″	15 "
9	31″	18 "
9	31″	17 "
12	36″	47 "
14	37″	50 "
14	40″	54 "

In terms of general fisheries, it is interesting to note that our commercial shrimp, the Lake Shrimp **(Penaeus setiferus)**, requires only one year to attain its maximal size. This species of shrimp lives only one year.

Control of Plants

The control of plants is the most important problem in most of our southern lakes.

The complexity of plant relations to fishing success is certainly comprehended by few sport fishermen.

Broken down, it may here be quite simply stated that plants may make or destroy a fishing lake. Southern conditions profoundly differ from the studies in the State of Wisconsin that have provided for the last seventy years the basis of ideas about lake management. Fundamentally, we, in the Deep South, accelerate greatly everything that occurs in the northernmost tier of states. Fish grow at least twice as fast and the whole biological structure of the lake, which is a world in itself, equally speeds up.

The Louisiana lakes fall in a number of quite different patterns. Plant control is often actually the key of fishing lake success.

First of all, it must be stated that "moss" is an absolutely meaningless word involving everything that is green and that grows under water.

However, Louisiana lake plant problems may be resolved into certain broad classes.

The writer has been repeatedly called into consultation about lakes that once produced wonderful fishing, now have become worthless.

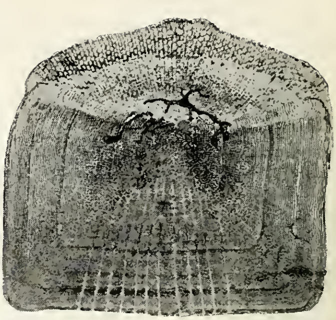
The plants that make a good fishing lake are not the plants that create a fine duck lake. There is, for example, an easily identifiable plant, the Water Shield (it can be immediately identified because of its bright olive green upper color and brilliant color of the undersurface of the leaves and the stems, the absence of any cleft, the floating leaf is entire. All these submerged parts, undersurface of leaves, stems and the long "runners" are covered with a completely transparent coating of "jelly") which is an absolutely worthless fishing lake plant but is one of the desirable plants for a waterfowl lake.

Here are enumerated some of the most easily identifiable water plants that concern Louisiana fishermen.

One of the commonest of the mergent plants is the American Lotus. Not really a Lotus and actually a native of North America, this plant when it first grows emerges above the water, later rests on the water and can be instantly identified because of the fact that the floating leaves are covered with a natural wax that causes water drops falling upon these leaves to appear like brilliant mercury. Wide in range, the weeds of the plant were formerly ground up to provide a highly nutritious meal. These seeds are contained in a peculiar structure that looks like the head of a garden watering can. This is a dangerous plant. In the latitude of Florence, Alabama, it has been known to produce from one single individual a circular patch one hundred and sixty feet in diameter. Fortunately, this plant can now be easily controlled by methods, two of which are below indicated.

American Lotus contributes nothing to wild life values. Ducks do not eat its nutritious seeds, fish derive nothing from it. This species can be damaging to the usefulness of wind agitated wave action, bringing the amount of dissolved oxygen present in the water to such a low level that the fish in the entire lake may perish.

Lotus can be completely controlled chemically or by cutting. Where Lotus occurs in a lake, cutting should be done during the months of June and July. The plant should be permitted to develop and to blossom. When the typical "watering can" seed containing structures are grown and are still green, the plant should then be cut and dragged to shore to die. Any of the very many 2, 4-d formulations can be used as a substitute for mechanical cutting. These will destroy the plant to its extreme roots and if applied before the seeds have completely developed, they likewise will die. Two amazing attributes of the American Lotus seed should here, perhaps, be stated. Cautiously ascertained age of a closely related Chinese species (distinguishable only by specialists) retained for over a century the ability of the seeds to germinate. Second, unlike so many other aquatic plant seeds, those of American Lotus possess in their composition the necessary available ozygen so that they can germinate in completely stagnant water.



Scale of White Bass (Lepibema chrysops), called in Louisiana the Barfish. Exposed part of scale is the light lower area. This scale shows four annual rings and is thus four years old. Note that growth during the fourth year is quite small. (After Sigler).

Lotus is a magnificant and dangerous plant. Its control should be systematically undertaken.

Underwater are many other dangerous plants, useful when few, destructive when abundant. The following brief enumerated indicates some of these. All of them are meaninglessly referred to as "water moss." Illustrations of some of them are shown.

Turtles as Predators

Turtles, on the whole, provide a somewhat controversial subject, but anyone who, like the writer, has seen them stacked five deep on emergent logs sunning themselves realizes that some control measures for the reduction of their populations must be carried out. Herewith illustrated is a simply devised, inexpensive, easily constructed turtle trap that by modification of the spacing of the spikes and the size of the mesh can also be adapted for the capture of the equally objectionable water snakes which live to a very large degree upon useful game fish.

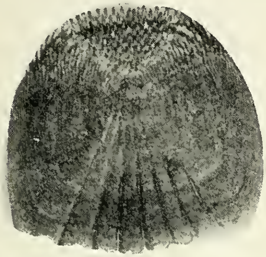
The role that turtles play as predators can be extremely important, the actual damage or good that various types of turtles do require local evaluation.

Turtles can perform a good office by eating up dead fish and performing other scavenger duties, thus preventing pollution and subsequent oxygen depletion. However, some species notably subsist directly on living fish. One of these is the Snapping Turtle. As shown in the accompanying illustration based on the work of Dr. Lagler (Lagler, 1940), it can be observed that the Common Snapping Turtle *(Chelydra serpentina serpentina)* has been known to consume as much as 34.2% of its diet in game fish.

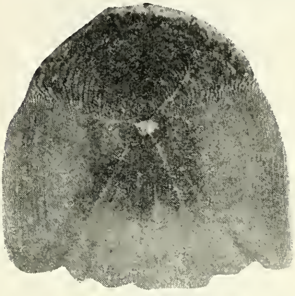
The common Snapping Turtle usually weighs from fifteen to thirty pounds, but one swill barrel fattened individual attained the astonishing size of eighty-six pounds.

The Alligator Snapping Turtle (*Macrochelys temminckii*) is the largest fresh water turtle of the whole United States. It has been known to attain a weight of two hundred and nineteen pounds. It is an extremely dangerous predator.

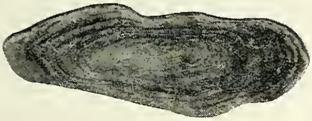
Soft shell turtles occur throughout the entire United States and much of Canada. They are extremly destructive of fish and often abundant in our Louisiana lakes. They are immediately identifiable because of the absence of any hard shell, which is replaced by soft shell both above and below, and by their odd, elongated needle-like snout. They are extremely active and can weigh as much as thirty-eight pounds. The writer has found them in immense abundance in the Ouachita River near Monroe during the months of June and July, at which time they were about the size of a twenty-five cent piece. They are highly destructive and, at the same time, are valuable as food. The writer was surprised to learn during a dinner at Antoine's that soft shell turtles there served did not come from Louisiana, where they are abundant (and usually ignored), but had to be imported from Wisconsin and Michigan. Unlike the other turtles used in useful food, this one is prepared shell and all.



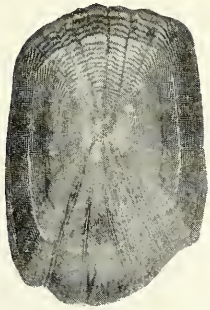
Largemouth Black Bass
("Green Trout")



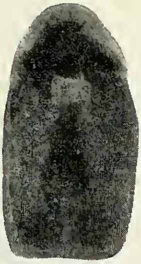
Common Goldfish



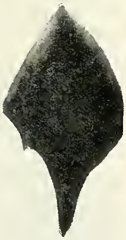
Common Eel



Common White Sucker



Bowfin (Choupique)



Long Nosed Gar

The above illustrations reveal the wide range in shape but general concord in fundamental structure of five native Louisiana fish and one introduced species, the common Goldfish. The Long Nosed Gar shows the sunken actual scale, which was formerly used by native Louisiana Indians as an arrowhead. Gars are very primitive fish. The Bowfin (called in Louisiana the Choupique) is also an extremely primitive species but presents an entirely different form. The scale of the Common White Sucker shows the clear pattern of growth rings. The scale of the Largemouth Black Bass (commonly called in Louisiana "Green Trout") clearly exhibits how little of the scale is external. The scale of the Common Eel is particularly interesting since these scales are so deeply embedded in skin that almost invariably fishermen believe no Eel has any scales. The scale of the common Goldfish is of no interest because it reveals how far from clear are the growth marks recorded by a fish that is held under artificial conditions and not subjected to seasonal changes. **(After Lagler).**

Special Lake Management Problems

It is obvious that many important aspects of lake management can be given space here only for reference to them. The writer will gladly provide on request additional references to books and persons providing special information. These particular aspects of lake management are here mentioned because sport fishermen unfamiliar with basic biological principles often underestimate or exaggerate their importance.

1. Electric Screens and Fish Ladders

Sportsmen who fish impounded waters are almost invariably alarmed when they see, not hundreds, but literally thousands of fishes of all sizes pour over a spillway.

Unless informed, they believe that this represents a complete loss. Summed up, this is not necessarily the case. Usually, it is more profitably to spend money in improving the conditions in the lake itself or providing breeding sanctuary areas in the lake than it is to spend any considerable portion of the budget in preventing the outflow of fish in the lake. Many sportsmen are hard to convince in this matter.

Compactly stated, there are exceptional circumstances under which this loss of fish is of importance. Usually, however, this outflow of fish may be in practical terms disregarded. The reason for this is simple. A well managed lake will support its productive capacity of fish whether such loss occurs or does not occur .There exist, however, three situations where some useful measures may be undertaken: first, where the lake is relatively sterile in production of young fish, the problem then becomes one of the balance between improving reproductive capacity of the lake or saving the outgoing fish; second, where the outflow of the young or adult food ("forage") species exceeds the production of the lake; and, third, where the spillway of the artificial lake presents a barrier against the ascent of the breeding adults of game fish into the area. Only briefest possible comments are possible in this space. These comments follow in corresponding consecutive order.

First, if the lake is under any reasonable control, investment of funds in improving fish spawning and fish growth in the lake is more useful than barring the escape of fish. Two common methods of holding fish back from crossing over a spillway are available. One is use of an electric screen. This highly effective device involves the establishment of an electrical field emanat-

(Continued on Page 20)

HIGH TIME TO FACE UP TO THE FUTURE

(Editor's Note: The following column taken from the Pittsburgh Press and written by JOHHNY MOCK, a past president of the OWAA and well known in outdoor writing circles, brings to the fore a problem that most sportsmen and far too many officials in game administration refuse to face. You just cannot attain a solution to the problem of the future of hunting and angling in these United States by ignoring it. Johnny in this column pulls no punches in giving the present picture regarding the problem. What do you think about it?)

By Johnny Mock

THE hunter is a peculiar individual.

If he were to be classified among the legends of nature he probably would be placed with the ostriches. These birds are said to stick their heads into the sand so they cannot see danger when it approaches. By doing so they believe all harm will be avoided.

Recently, two nationally-known figures in the conservation world have expressed themselves in regard to the future of sport afield. One said: "We'll continue to have hunting—but at a price", adding that "the time was not too distant when farmers will have to be reimbursed, either by individuals or the state, for use of their 'happy hunting grounds' ".

The other said: "There are some who sincerely feel hunting and fishing in the United States eventually will follow the pattern of that in England and Europe. On the British Isles good hunting and fishing have been maintained for hundreds of years in the midst of dense populations.

"But there," he continued, "game and fish belong to the landlords, who care for protected wildlife as they do domestic stock. Game is not overshot and all fish are not removed from the stream. There, only a few are permitted to enjoy hunting and fishing. Here we have attempted to manage the sport so that it is available to all—rich and poor alike.

"However, some experts say that, as hunting and fishing pressures increase we are bound to reach the end where only the privileged few will shoot with friends on well-stocked and well-maintained preserves, or where others will band together to lease hunting rights from landowners."

The first statement came from Louis Bromfield, internationally-known author, conservationist and farmer. The second was made by Albert E. Day, Director, U. S. Fish and Wildlife Service.

A bulletin of one of the leading sportsmen's organizations in the country expresses itself in this manner:

"We cannot agree with Mr. Day and Mr. Bromfield that financial remuneration, be it fees or hunter per capita tax, will solve the problem. And most certainly we are not going to adopt the English system of M'Lord, can I please kill one of your dear rabbits, or hunt on your lands?" That is sure bunk and no true American should be quoted as predicting such a change in our system.

"Furthermore, we are disappointed that Mr. Day, a public official and head of the service that is supposed to administer for American public services, should feel called upon to even mention that the privilege of hunting and fishing in America eventually will be only for the wealthy—the privileged few."

Apparently free speech is also on the way out if the ostriches in the conservation world are to have their way.

Not long ago this department also made the statement that the American system of free hunting was doomed and gave the

Bernard and Frederick Bischoff with a bag of eight woods rabbits they killed during the hunting season on their farm near Eunice, La.

Jimmie and "Tar" Caldwell, of Oakdale, La., with their limit of bobwhites killed during the last season. These birds, two of which were banded, gave evidence that quail released last October were in the same covies as unbanded birds, and provide additional proof that the restocking program of the department of Wild Life and Fisheries is bearing fruit.

reasons why. The resulting correspondence, mostly from rank and file hunters, was evenly divided. Some agreed that the outlook was none too good, the others took the stand mentioned in the foregoing paragraphs, condemning us for putting such stuff into print, thereby putting devilment into the heads of those most affected.

The advance of civilization, as opposed to hunting, can no more be stopped then to keep water from flowing downhill. The demands of the hunter, and his conduct, are other contributions which haven't lent themselves favorably toward a continuation of the present system.

If the thinking hunter will take time to consider a few of the important facts he will realize that there must come an eventual change in the method of hunting the same as there has been in transportation, communication, mode of living and the many other factors in our present day life.

Compare today with just 15 years ago, when 10,400,000 hunting and fishing licenses were issued. Last year the figure exceeded 26 millions, more than two and a half times as many.

Our population in 1900 was 76 millions; today it exceeds 150 millions. That increase in population means more living quarters, more growing areas, more manufacturing plants, more transportation systems, all of which make a drastic reduction in the hunting facilities. Meantime the army of hunters has increased in even greater proportion.

We can remember the toll at Bennett Station, now Ohio St. where Fried and Reineman's plant now stands. Also the toll gate at Blind Station, where the Ross Township municipal building now reposes; when the junction of East St. and Perrysville Ave. was the end of the line. Practically all of the surrounding borroughs were once good hunting territories.

Under such changes, no system can stand up. Hunting has been pushed farther back with each succeeding year just as has the frontier. What was once, not many years ago, wild and inaccessible country, full of game, is now growing villages, with homes dotting the outlying regions and farmland adjacent to it.

Yet to remind anyone of this condition or to say anything in its connection is treason to the conservation cause.

It may not be necessary to use "M'Lord, can I please kill one of your dear rabbits or hunt on your lands," but words to the same effect have already become necessary in many parts of the country. And the sooner the hunter realizes there isn't a sound or logical reason why a farmer or land-owner should make his property accessible to any Tom, Dick or Harry who comes along, the longer the ever-diminishing facilities will continue to provide sport.

Playing ostrich lends nothing toward the perpetuation of sport afield and astream.

No bird of prey, except the shrike, has the power of song.

Ernest S. Clements, Commissioner of Wild Life and Fisheries, (left) providing a happy moment for Martin Shevnin, retiring president of the Louisiana Wildlife Federation (center) and James Nelson Gowanloch, chief biologist for the department of Wild Life and Fisheries, at the recent convention of the federation in Alexandria. Commissioner Clements was the featured speaker at the annual banquet.

STATE WILDLIFE FEDERATION HOLDS ANNUAL ASSEMBLY

By Mel Washburn

UNDOUBTEDLY the most harmonious annual convention in the history of the Louisiana Wildlife Federation was held at the Bentley Hotel, in Alexandria, on March 9 and 10, and, it is generally believed will be the forerunner of a year of renewed and concerted activity by the affiliation of Louisiana's sportsmen toward fish and game conservation and protection.

Jerry Besson of Baton Rouge, was unanimously elected president to succeed Martin Shevnin of Alexandria; Will Glassell of Belcher, La., was elected vice-president; Charles Horn of Shreveport, treasurer; and Dr. L. F. Magruder, superintendent of the East Louisiana State Hospital at Jackson, was elected secretary.

Charles Bosch, of New Orleans, was appointed executive secretary of the federation, with a schedule of duties outlined that bids fair to at least double the club membership in the organization, as well as greatly augment the membership lists of each individual club throughout the state which is affiliated with the state group.

Although not as well attended as some former state conventions, there was a genuine spirit of cooperation manifest throughout the two-day sessions, and it was the concensus of opinion that the bickering and friction, that had been evident because of difference of beliefs of widely separated community representatives in the past, was to be forgotten in a sincere effort to present a united front in the fight for the betterment of fish and game conservation in the future.

It is doubtful if any convention of this organization in the past has been as rich in oratorical entertainment as was this Alexandria conclave.

Ernest S. Clements, commissioner of Louisiana's Department of Wild Life and Fisheries, was the principal speaker at the annual banquet, and drew a clear picture of his fish and game restocking program that has been attracting national attention. After outlining in detail the establishment of game preserves, the work of predator control units in removing the predatory animals and birds, the installation of capable game management experts and the appointment of diligent game wardens for the asured future of these game refuges, Commissioner Clements enumerated the furred and feathered game stock that has been "planted" in these preserves for the future repopulation of Louisiana's game wildlife. And in conclusion he made an impassioned plea for the cooperation and assistance of every sportsman in the state

(Continued on Page 24)

AN OLDTIMER REMEMBERS

By D. L. McPherson

President, First National Bank of Abbeville, La.

THE opening paragraph of Arthur Van Pelt's article in the February number of the *Louisiana Conservationist* "Roll Call For Game", "Give me a story on our Louisiana hunting during the season just ended," reminds me that I could better give him a story on the hunting season in 1900 that had no ending, and that conditions existing then are responsible for the four-a-day bag limit we had during our 1950-51 hunting season.

My first flare into Louisiana marshes seeking the wiley greenhead was in 1895. Ducks were as numerous as blackbirds in a rice field and the sky was the daily bag limit then. The prairies were their favorite feeding ground and they were easy prey for the market hunter. The section of the parish west of Abbeville was undeveloped and was an open feeding ground for ducks and geese. I frequently drove across the open prairie, between Abbeville and Guyedan, and the entire territory was populated with hundreds of thousands of ducks and geese. They were so unafraid of a horse, hitched to a buggy, that you would often find yourself surrounded by hundreds of blue geese or mallard ducks.

George Williams of Coushatta, La., with a string of bass he caught in Black Lake early in March.

Mecca spots for wild life assembly were found along the Gulf Coast at Cheniere Au Tigre and Mulberry, and these spots were reached only by sail boat across Vermilion Bay, through Southwest Pass (Vermilion Bay) and on the Gulf west for fifteen to twenty miles.

Frequent hunting parties from St. Landry, Lafayette and Vermilion would make the trip to one of these locations, pitch camp and spend a week or ten days killing ducks and geese by the hundreds. There being no way to preserve the overplus, it was fed to hogs belonging to the residents in the area. I have personally seen piles of one to two hundred ducks spoiled for lack of refrigeration. They were slaughtered, not for the need, but for the love of killing. Along the edge of the marsh the market hunter had his day. After artifiicial ice was introduced, the market hunter had refrigerator boxes built and installed near his camp. In these the ducks were preserved until they could be taken to high land on ox sleds and by wagon team, to shipping points for shipment to New Orleans and other places.

I personally knew two market hunters who had their camp in the marsh north of White Lake, Vermilion Parish, whose average daily kill of mallard ducks was 200. They had a 2000-pound ice box stored at their camp to accommodate their daily kill. When this box was full the contents were loaded on sleds drawn by oxen and dragged to high land and conveyed to Gueydan for shipment to market. I knew these men personally and one of them was the finest duck shot that I ever witnessed shooting. He used a 12-gauge pump gun, and was an expert caller. He could call a flight of mallards and when they were within easy gun range he could have the fifth duck falling before the first kill hit the water. These were only two of the many market hunters that infested the marshes and that was the beginning of the end of the plentiful duck population.

I believe I was the first one to suggest to the Louisiana Legislature that a law should be passed setting a daily bag limit. I know that I sold to the Louisiana Game and Fish Commission, headed by John A. Miller, the first motor boat that the commission ever owned.

The first daily bag limit set was not closely observed and as the duck population thinned out the daily limit was more generally observed, especially under strict law enforcement. Daily limits decreased from 50 to our present four. With the number of shooters multiplying by ten fold there are almost as many ducks killed with a bag limit of four as their were when the limit was 50. The formation of shooting clubs that prohibit afternoon shooting has helped to sustain the fast dwindling duck and goose family. There should be no afternoon shooting of ducks and geese and the Federal and State laws should be amended to prohibit the practice.

Even the Louisiana little fish creeks have big ones. Here's A. P. Burton of Winfield with a catch of bass in Little Fish creek near Pollack, La.

MIDGET SAMPSON

The flea is so tiny that hundreds of them could be placed on a quarter at one time. Yet they can jump three or four feet in a single leap.

A man, if given the same strength in proportion to his size, could jump six miles!

The flea can lift one hundred and forty times his own weight. This means that a man, in proportion, could easily lift a ten-ton truck.

The average life of a flea is only six months, yet it can be taught to do all kinds of complicated tricks. Some have been taught to juggle, pull tiny wagons, dance, or even kick a tiny ball.

LAMPREYS MUST BE WATCHED

By James Nelson Gowanloch

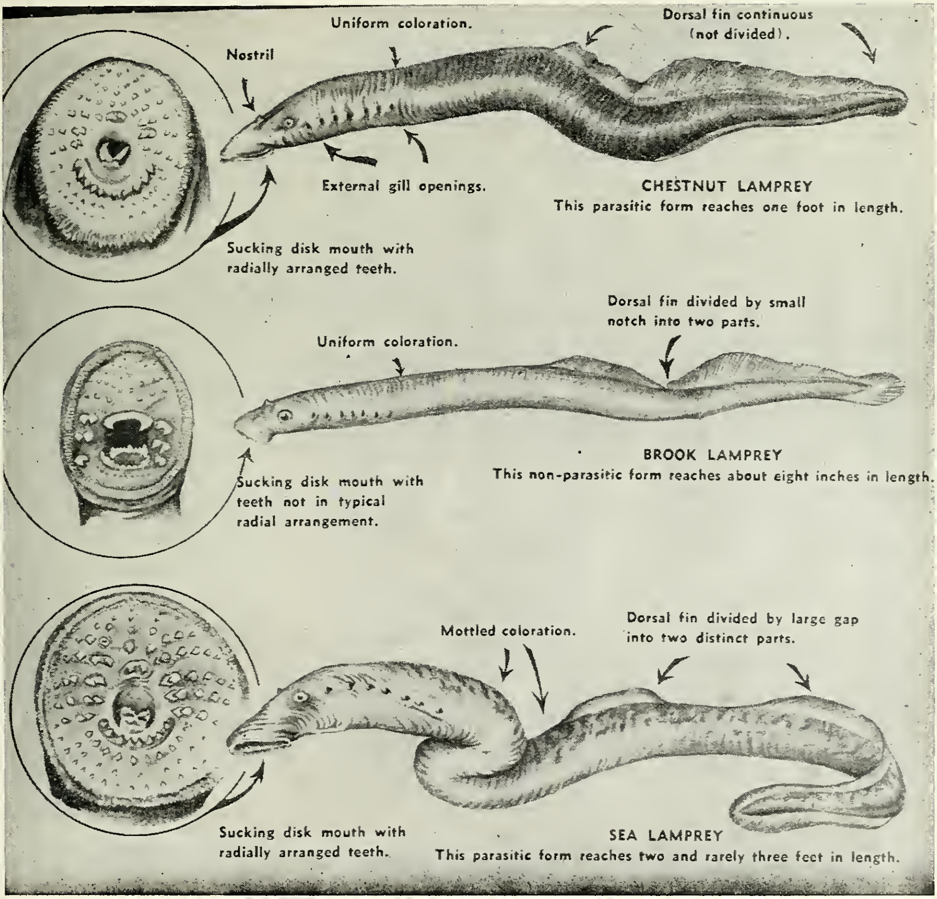
COMMISSIONER Ernest S. Clements authorized a warning in the 1950 July-August issue of the "*Louisiana Conservationist*" that Lampreys, which have become increasingly prevalent in Louisiana, should be carefully watched because they are cousins of and closely similar to another kind of Lamprey that in its disastrous sweep of the Great Lakes has wiped out commercial fisheries there. Lampreys are the most primitive of all vertebrate animals. They have no paired fins like other fishes; they have no jaws (instead they have a round mouth with a rasping sucker); they have no gill flaps like other fishes but instead a series of separate gill openings on each side of the head; they are all either blind or nearly so for, although they do have eyes, they seek out their food by their sense of taste; they have no roof to their skull, which is a pretty bad condition; they have not a bone in their body; and their "nose" is simply a pit, useful only for "smelling."

Lampreys have become particularly aboundant recently in the Lake Catahoula area.

Lampreys are large, leach-like animals, the parasitic species of which live on fish.

Lampreys have a strange life history. Lampreys must not be confused with what in Louisiana are called Lamprey Eels, which are actually not even fishes but are tailed relatives of frogs.

Sport and commercial fishermen will find parasitic Lampreys attached to game and food fish. Briefly stated, as far as is now known, the only parasitic Lamprey that occurs in Louisiana is the Chestnut Lamprey, immediately identifiable by the fact that its back fin (dorsal fin) is not divided. It reaches a foot in length. It attacks and damages a wide variety of fishes. However, nowhere does it wipe out the game and commercial fish in the manner that the dangerous northern Sea Lamprey accomplish. Lampreys belong to two groups, parasitic (such as the Chest-


Uniform coloration.
Dorsal fin continuous (not divided).
Nostril
External gill openings.
Sucking disk mouth with radially arranged teeth.
Dorsal fin divided by small notch into two parts.
Uniform coloration.
Sucking disk mouth with teeth not in typical radial arrangement.
Mottled coloration.
Dorsal fin divided by large gap into two distinct parts.
Sucking disk mouth with radially arranged teeth.

CHESTNUT LAMPREY
This parasitic form reaches one foot in length.

BROOK LAMPREY
This non-parasitic form reaches about eight inches in length.

SEA LAMPREY
This parasitic form reaches two and rarely three feet in length.

nut Lamprey that ocurs in Louisiana and the dangerous northern Sea Lamprey) and the non-parasitic forms.

All Lampreys lay eggs which hatch into peculiar, small young, which live from three to four years sheltered in the muddy bottoms of rivers before they transform into adults. Parasitic Lampreys then attack useful fish, bore their way into those fish, eat the blood, flesh and organs and, in the end, may leave merely hollow skins containing clean skeletons. They then mate and die. The non-parasitic Lampreys have an entirely different history. When they transform into adults, their digestive system completely degenerates and they cease to feed, therefore, causing no harm. They mate and die.

The dangerous Sea Lamprey has never been found in the Mississippi Valley, although it has been reported as far south on the Atlantic Coast as Southern Florida. Formerly, they entered Lake Huron to breed, but were barred from the other Great Lakes by Niagara Falls. When the Welland Canal was constructed, they passed through to Lake Erie in 1921, Lake Michigan in 1936, then spread into Lake Huron and Lake Superior. They are now as far east as Chicago. Their destruction has been the most terrific and disastrous in the history of any American commercial fishery. Five years ago, a Lake Michigan fisherman could catch with his four miles of nets six thousand pounds of Lake Trout in a single set. Last year, the same fisherman caught not six thousand pounds, but simply six individual Lake Trout. Lake Huron catch, due to the Sea Lamprey, fell from two million pounds to zero. The annual damage done on the Great Lakes is far in excess of seven million dollars.

The purpose of this article is to indicate that Lampreys of the Chestnut species, the not dangerous kind, are appearing in unusual numbers at present in Louisiana waters. It is the belief of the writer that in the case of Lake Catahoula, this is due to the unusually low water conditions that occurred during the winter of 1950-51, whereby the Lampreys were concentrated together with concentrated populations of game and commercial fish. These Chestnut Lampreys have never been known to cause extreme damage anywhere, even though they do destroy some fish. Recently, a sports fisherman caught one Largemouth Black Bass ("Green Trout") to which were attached no less than seven Chestnut Lampreys. The paramount purpose of this article is to alert all sports and commercial fishermen to the danger involved as a result of the introduction of the Sea Lamprey into Louisiana waters. The accompanying illustration distinctly shows the distinguishing differences.

Specimens of Lampreys taken should be sent in to the Department of Wild Life and Fisheries where they will be identified should the devastating Sea Lamprey ever enter the waters of our State.

Charles W. Elam (left), game warden, and W. W. Maddox, trapper of the predator control unit of the department of Wild Life and Fisheries, with a wolf they trapped during the recent severe cold weather near Logansport, La. The wolf was snow covered and frozen stiff when found in the trap, and the kind of weather it was is evidenced by the snow on their jeep.

ROLL YOUR OWN WORMS . . .

(Continued from Page 7)

Methods for Invertebrate Animals," which volume is listed in the bibliography:

"Mr. Ralph W. Moltke of 106 Broadway, Peoria, Illinois, issues a small bulletin on permanent-bed culture of *Allolobophora (Eisenia) foetida* that he sells to fishermen and to dealers in baits for fishing. It contains detailed practical instruction. With his permission we summarize here the main features of his plan.

1. Select a shady place in well-drained soil for a bed, say 3 x 6 feet.
2. Dig out a foot or more of soil and fill with well rotted manure.
3. Wet it down thoroughly and introduce the worms by distributing them over the surface.
4. Cover them with a sprinkling of dirt and allow them time to burrow.
5. Add some pieces of hard stale bread soaked in water and cover these with dirt.
6. Feed the worms once a week by spreading over the surface of the dirt corn meal, old bread, or vegetable refuse from the kitchen, covering this with dirt each time and adding a layer of straw or gunny-sacking to retain the moisture. Sprinkle the bed with water whenever it shows signs of getting dry.
7. Remove worms for use by turning over surface layer with a hand digging-fork, digging in a new place each time."

The most comprehensive and interesting publication produced in recent years concerning rearing and care of baits entitled, "Propagation of Minnows and Other Bait Species," written by Dobie, Meehan and Washburn (it is listed at the end of this article) includes an excellent brief description of earthworm rearing. This bulletin, which is still available from the United States Government Printing Office, Washington, D. C., is highly recommended to the attention of every fresh water sportsman. The procedure is entirely suitable for any ardent "worm" fisherman, and particularly since it involves usually available materials and time. It is for these reasons that their method is herewith quoted in full:

"Earthworms can be raised in basements, under heavy shade of trees, or in other cool places. Bait-size worms can be had in three months, and the worms mature in six months. A tub two feet in diameter and 10 inches deep, fully utilized, should produce several thousand bait-size worms a year.

"The different species of earthworms vary in size when full grown. The common earthworm or night crawler reaches a length of 10 inches; the small red species found in manure piles grows only to three and one-half inches. The earthworm reared should be of a size suited to the fishing needs of the region.

"A suitable soil is prepared by mixing manure, screened top soil, and peat moss into a fine loam. The peat moss may be replaced by other forms of organic matter such as leaves and hay. Another soil formula calls for dry coffee grounds and loam mixed 50-50. The loam should be well moistened but not soaking wet.

"Almost any type of box is suitable for the culture of earthworms, but small boxes that can be handled easily are to be preferred. The lug boxes in which fruit is sold are excellent. An old tub or a metal drum cut lengthwise is also good. If wooden lugs are used, they should be placed on bricks or blocks to prevent the worms from escaping into the ground. Lugs can be stacked if separated by blocks.

"When preparing the culture box, it is advisable to place a piece of burlap on the bottom, fill the box with prepared loam to a depth of eight inches, smooth over the surface, and spread the breeder worms on top. After the worms have burrowed into the soil, the surface should be covered with burlap and moistened. The box will require water at frequent intervals to keep the soil moist.

"The worms can be fed chicken mash or a mixture of coffee grounds, dried cracked wheat, and bread crumbs. Feed should be given daily. Another feeding formula is one pound of lard mixed with two pounds of corn meal. This should last a month. Ground garbage spread over the surface of the soil makes a good inexpensive food. Care should be taken that the food is in a thin layer or it may heat and destroy the worms.

"The worms can be harvested by emptying the box and sorting out those of suitable size. The loam should be saved and transferred to a fresh box, as it contains the egg capsules which will start a new colony. The unused worms should be returned to the old box as breeders. Egg capsules for starting new boxes can be best obtained by covering the surface of the soil of a breeder box with a mulch of finely crushed dead leaves. If this mulch is kept moist for several weeks, egg capsules will be laid here and will hatch in 14 to 21 days. The mulch and the soil immediately below can be added to new soil to start more boxes.

"Before sale, the worms should be placed in sphagnum moss to 'scour' for three or four days. At the end of this time the worms will be almost transparent but tough and lively. If it is necessary to leave them a week or longer in the moss, a little fresh milk should be poured over them at intervals of a week. The moss should be rinsed every 10 days. A good way to carry the worms on the lake is to place them in a sugar-sack full of damp moss. The sack should be dampened whenever necessary during the day."

The only additional suggestions that the writer would make would be that the breeding receptacles if held in garages be protected from attack by marauding ants. This can easily be done by scattering insecticide powder over the adjacent area of the floor where the worms are being reared. No insecticide must be permitted to enter the worm beds.

It may astound many readers to learn that there actually exist in the world earthworms that might well have come out of a nightmare. These extraordinary worms all belong to the family Perichaetidae, and the giant species among them occur in widely scattered, highly separate areas including Australia, Africa, South and Central America. It is hard to imagine, but is definitely true, that some species of Perichaetidae attain the individual size of eleven feet in length and the thickness of a sausage. Well could the fisherman provided with such bait set forth with unbounded enthusiasm.

Howard J. LeBlanc and his daughter, Cherie Ann, with eight bass taken in Cross Lake, near Shreveport. Two of the bass were landed on one cast of a crippled minnow.

Readers have doubtless read of a widely used and very easy method whereby earthworms can under certain circumstances be given an electric shock at night that will drive them to the surface of the ground. Essentially, this apparatus consists of five elements, i. e., a portable battery and two pointed metal rods with a simple device to increase voltage inserted in the circuit. The operator can soon learn the distances apart that under varying conditions of moisture these rods need to be placed. Then, using a flashlight, he can readily locate the worms that have wriggled upward out of the electrical field.

Crickets have a peculiar and not readily understandable popularity in certain sections of Louisiana, where the enterprise of catching and selling them provides income for many small boys. Crickets can be held and reared in garbage cans, as set forth by Dobie, Meehan and Washburn. They recommend waxing the inside of the can for the top six inches to keep the crickets from climbing out. A layer of clean sand kept moist and covered with wood excelsior for protection and roosting space will provide a good substratum for egg-laying operations. Poultry laying mash is recommended, but uncooked oatmeal is also satisfactory. The writers state that the food should be placed in a small pan or saucer and that about two pounds is required to produce one hundred crickets. A quart fruit jar drinking fountain provided with cotton in the watering can (to keep the young crickets from dorwning) can be used.

These authors recommend that 30 adult crickets, half male and half female, be used as a complement of a single garbage can. The female can be identified readily by the long, egg-laying tube in the tip of the abdomen. They found that a single 24 inch can produced 400 crickets in three months. Adults are distinguishable by their development of wings. These authors recommend the use of insect powder on the floor outside of the can to prevent forays by ants, which are highly destructive of crickets. Where spiders or other possible predators are present, screening of the can will be necessary. Temperatures of 80 to 90° F. are best.

The widely distributed Catalpa Worm (it occurs from Illinois to Louisiana) is the larva of one of the Sphinx Moths, its technical name being *Ceratomia catalpa*. Very prolific (they can lay as many as one thousand eggs in a single mass), the Catalpa Caterpillars hatch in about two weeks, feed only on the Catalpa tree foliage and attain a length of about three inches. They are excellent bait for many panfish. When grown, they move down the tree trunks into loose soil and there transform in the then moth stage. Two generations can be produced in a year—the first in spring, the second in late summer or early autumn.

The author will be glad to hear from any readers of unusual baits, methods of baiting or of raising baits that they have found to be successful so that their discoveries may be made available to other enthusiasts.

The writer of this article will also appreciate receiving the names and addresses of any Louisiana or Mississippi operators of earthworm rearing enterprises, particularly those who engage in mail order business. The author receives constant requests for such sources from which earthworms may be procured. Mimeographed copies of lists of such dealers could then be used in replying to these inquiries.

Useful References

Carbine, W. F., "How to Raise Earthworms," Institute for Fisheries Research, University Museums Annex, Ann Arbor, Michigan.

Dobie, J. R., Meehan, O. L. and Washburn, G. N., "Propagation of Minnows and Other Bait Species," Circular 12, Fish and Wildlife Service, U. S. Department of the Interior, Washington, D. C., 1948, obtainable for thirty-five cents from Superintendent of Documents, Washington 25, D. C.

Galtsoff, Paul S., Lutz, Frank E., Welch, Paul S. and Needham, James G., "Culture Methods for Invertebrate Animals," 1937, Ithaca, New York.

Hopp, Henry and Slater, Clarence S., "The Effect of Earthworms on the Productivity of Agricultural Soil," Journal of Agricultural Research, Vol. 78, No. 10, Pages 325-339, Washington, D. C., May 15, 1949, obtainable for ten cents from Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Swingle and Sturkie, "Raising Fishworms for Bait," Progress Report No. 5, Agricultural Experiment Station, Alabama Polytechnic Institute, Auburn, Alabama.

United States Department of the Interior, Fish and Wildlife Service, Washington 25, D. C., "Raising Earthworms for Bait," Fishery Leaflet No. 23.

The lemur, a member of the same order as the monkey, gets its name for its nocturnal habits. Lemurs is Latin for "sprites that walk in the night."

LAKE MANAGEMENT . . .

(Continued from Page 13)

ing from submerged metal rods which "shock" the fish into turning back. This method, indispensable in such engineering situations as screening off under certain circumstances the intake of municipal water supply, is highly expensive and for ordinary lake management not feasible. Thus, in one lake that the writer studied the cost of such an installation of an electric screen was in excess of thirteen thousand dollars, a sum that could greatly better be invested in improving specific lake areas.

The second device is the use of screens. The effectiveness of this procedure depends entirely upon the flowage and configuration of the lake. The great trouble here is the contriving of a fish screen that can be serviced practically so that no jam up of debris will occur with subsequent often damaging rise in lake level or subsequent complete loss of the screening structures.

The third situation involves not only biology but public relations. The general situation is that in Louisiana except under special circumstances fish ladders are not needed because the long spawning season and rapid and long growing season of fishes in our latitude will usually sustain to its supporting capacity the fishing pressure of the lake.

The fact does remain that in spawning season many species of our game fish press upstream and, blocked by spillways, congregate below that particular lake. The site of successful fishing below the spillway and the absence of immediate successful fishing above the spillway naturally arouses the interest of sportsmen. Long and extensive research in the unique chain of water impoundments that form the lakes of the Tennessee Valley Authority confirm the general principle (that involves some of our most important Louisiana freshwater game fish) that fish do congregate below spillways in response to stream influence.

Horace Buckley and Grady M. Collins, enforcement agents of the Department of Wild Life and Fisheries, with illegal fish nets they seized in the Ouachita River near Monroe. Spencer Maxwell assisted in the seizure but fell in the water and was too wet to get into the picture.

A great deal of work has been done on fish ladders. Essentially, fish ladders are engineeringly well devised structures where, through the spillway itself, can continue to overflow, but the fish, through a different channel, can respond to their natural stimulus of downward current and by-pass the spillway barrier.

The two most important references on the engineering involved are included in the brief bibliography below. These designs of fish ladders are many and their choice must be adjusted to the specific situation. The writer will be glad to discuss this matter on request with any persons who are interested.

The cost of these structures is little. Provided with the easily available general specifications, they can be readily tailored to requirement.

Lake management problems wherein fish ladder construction could be probably of considerable practical biological value and certainly of high public relations usefulness. This, the reader must remember, is in Louisiana, a state where due to its extraordinarily small altitudinal differences and water level differences, fish ladders would seem to be unnecessary.

Fertilization

Fertilization is the name given in lake management to a procedure whereby the waters of the lake are artificially enriched so that they produce abnormal abundance of minute plant life, thus screening out the penetration of light and, as a consequence, delaying or effectively eliminating the growth of undesirable submerged plants.

It is particularly in the Deep South that these techniques have been most notably developed and most eminently successful. The available reported researches in this field are extensive and of highest practical usefulness. Again, it must be remembered that each lake presents specific problems. Some lakes suffer from natural overabundance of fertilizing materials. Addition of more fertilizers would more completely damage that lake. Pre-eminent are the fine and so extensive investigations of Swingle and his associates in Alabama. References to some of his publications are given below.

Since many of these publications are not easily available, there is here given an extremely compact statement of the fertilization treatments that have been found to be effective. The facts are these. Application of such chemical weed destroyers as 2-4, D (Dichlorophenoxyacetic acid), which are so effective in attacking and destroying emerged plants, are useless in controlling submerged plants. The fertilization technique remains one of the most effective measures.

The writer will be very glad indeed to provide specific information concerning the amount, chemical characteristics and frequency of application of these fertilizers in controlling objectionable underwater plants. Certain details, chiefly area and estimated cubic volume of the water in the pond plus estimated flowage where the pond is not self-contained, are required.

Fertilizers fall into two general categories: "organic" (Cotton Seed Meal and Dry Sheep Manure are the ones used) and "commercial."

Initial procedures are based upon the surface rather than depth (because of the factor of light penetration). The following indicated general recommendations are herewith provided. Because of their present fluctuation in availability, the two mentioned organic fertilizers are included. The third organic fertilizer, Soybean Meal, is omitted.

The two discussed organic fertilizers should be applied as here given: First, Cotton Seed Meal, 50 lbs. per acre every week for the first seven weeks, every two weeks thereafter. A total of fourteen applications will be used in soft or moderately hard water. Second, Dry Sheep Manure. (This is composed of a combination of Dry Sheep Manure one part and of sixteen percent super-phosphate one part.) 50 lbs. per acre should be applied every week for seven weeks and a total of fourteen applications used in soft or moderately hard water.

Commercial fertilizers are evaluated and sold on the basic of their nitrogen-phosphorus-potash (potassium) content, this being coded as three hypenated separated numbers. The cost of commercial fertilizers depends on their constitution.

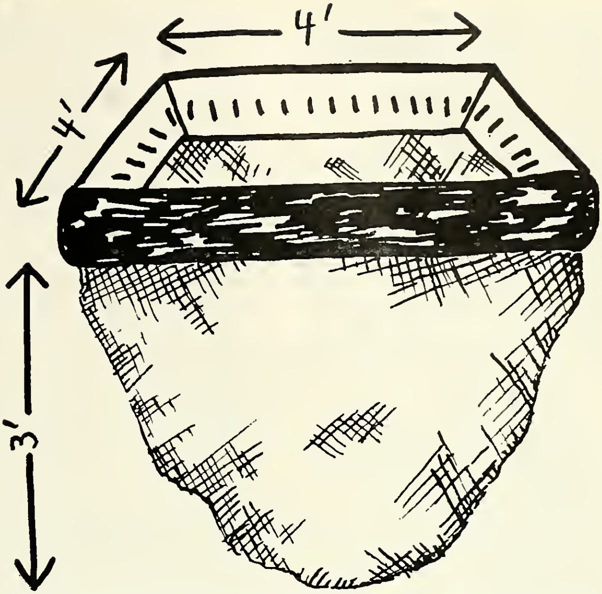
First, 12-5-5, three applications, 100 lbs. per acre at intervals of ten days. Apply at monthly intervals thereafter as necessary. This experiment was in hard water.

Second, 8-7-2, apply 130 lbs. per acre each week for three weeks and thereafter as long as necessary. This is for soft water.

For the information of the readers, the present FOB New Orleans market quotations are given. Prices will necessarily fluctuate. These are valid for the end of March.

Cotton Seed Meal	$50.60 a ton.
Dry Sheep Manure—Immediate price not available.	
Commercial Fertilizer:	
4-12-4	$40.45 a ton.
6-8-8	$58.00 a ton.
4-12-8	$44.00 a ton.

To secure the correct proportions for pond fertilization use, it will usually be necessary to secure and blend nitrogen-phosphorus-potash proportions to secure the desired mixture. This can easily be done. Usually dealers require a ten percent premium in price for the purchase of less than a ton. The fertilizer can be applied many ways, but usually the most practical is to broadcast it from the shoreward side of the body of water, since it is there that most of the objectionable plant growth does need control. Otherwise, it may simply be staked in burlap bags at intervals, or dragged through the water in a burlap bag. Time of application is of extreme importance and the writer will be glad to provide information concerning this factor.



This simple, inexpensive turtle trap should be anchored and visited twice a week. By reduction of size of mesh and spacing of nails, this trap can also be used to catch snakes. (Original drawing by Miss Eleanor Fairman, Artist of the Museum of the Department of Wild Life and Fisheries).

Seining of Commercial Fish

Contrary to general sports fishermen's beliefs, commercial fishing of a sports fishing area, properly controlled, is not only not damaging, but highly desirable. Again, the application of this lake management procedure depends upon the specific characteristics of the lake.

Inevitably, commercial fish, usually designated as coarse fish such as Buffalo, Gaspergou, Catfish and Carp, do compete in many ways with the actual fish production of a body of water. Just so much fish production can be supported by any given lake. A high measure of control of the kind in poundage of this fish production can be accomplished. Violently, many sports fishermen oppose such harvesting of coarse fish. This attitude is not sustained by the results of careful, long range and repeated scientific experimentation. It is clear, however, that such harvesting of coarse fish, if it is to profit the interests of the sportsmen, must be conducted under careful supervision, since there is always the possibility of the illegal taking and illegal and all too profitable sale of game fish, game fish that have been produced for the sportsmen's benefit by the expenditure of State money.

Various Federal and State agencies have published and distributed, often at no cost and invariably at nominal cost, important illustrated instructive bulletins on the subject of lake management. These provide for the ambitious student a source of expert information far beyond what is elsewhere available. It is, therefore, suggested that interested readers write to the Government Printing Office, Washington, D. C. and request from them a list of the available publications relating to fisheries, particularly matters of lake management and fish pond management. Similarly, the Fish and Wildlife Service, United States Department of the Interior, Washington, D. C. can be addressed directly and their available publications secured free of charge, thus avoiding the somewhat complicated prepayment rule of the Government Printing Office.

Similarly, inquiries addressed to other fisheries and game commissions of the southern tier of states will provide a wealth of further reference material.

It must be completely obvious that a lake is not a bathtub. The problems are extraordinarily complex but the solutions are often simple. It is the objective of this program of lake management to provide the answers. Often, these answers are for even adjacent lakes quite different.

It is for this reason that there is here appended a brief bibliography indicating some sources of information.

It is further indicated that upon application, any person seriously interested in lake management may ask for and receive the following listed special indications of sources of information. These lists will be found to be peculiarly useful because, in the first place, lake management in the northern United States and lake management in the Deep South are often completely different patterns and, in the second place, many of the most valuable sources of information are almost unknown, even to a deeply interested sportsman or a deeply interested scientist.

1. Cause of death of fish in ponds.
2. Turtle traps.
3. Bibliography of plant control.
4. Control of objectionable plants by fertilization.
5. Control of objectionable plants by water level fluctuation.
6. Control of coarse fish in relation to sports fish.
7. Preparation of fish parasite samples.
8. Preparation of plant samples for study.

The writer will endeavor to be of any possible aid in relation to the problems that have been discussed in these two brief articles.

Bibliography

American Association for the Advancement of Science, 1939, "Problems of Lake Biology," Lancaster, Pa.

Carlander, Kenneth D., 1950, "Handbook of Freshwater Fishery Biology," Dubuque, Iowa.

House of Representatives' Hearings, Select Committee on Conservation of Wildlife Resources, 78th Congress, First Session, 1944, "Conservation of Wildlife," and "Fertilization of Fish Ponds," Washington, D. C., Pgs. 77-80.

Lagler, Karl F., 1940, "A Turtle Loss?", American Wildlife Journal, Vol. 29, Pgs. 41-44.

Lagler, Karl F., 1949, "Studies in Freshwater Fishery Biology," Ann Arbor, Mich.

McLeod, A. M. and Nemenyi, Paul, 1939-1940, "An Investigation of Fishways," University of Iowa, Studies in Engineering, Bullet 24, Iowa City, Iowa.

Martin, A. C. and Uhler, F. M., 1939, "Food of Game Ducks in the United States and Canada," Technical Bulletin No. 634, Washington, D. C.

Needham, James G. and Needham, Paul R., 1938, "A Guide to the Study of Fresh-Water Biology," Ithaca, New York.

Nemenyi, Paul, 1941, "An Annotated Bibliography of Fishways," University of Iowa Studies in Engineering, Bulletin 23, Iowa City, Iowa.

Pope, Clifford H., 1944, "Amphibians and Reptiles of the Chicago Area," Chicago Natural History of Museum Press, Chicago, Illinois.

Pope, Clifford H., 1939, "Turtles of the United States and Canada," New York, N. Y.

Sigler, Wm. F., 1949, "Life History of the White Bass, *Lepibema chrysops* (Rafinesque) of Spirit Lake, Iowa," Agri. Exp. Sta., Iowa St. Coll. of Agri. and Mech. Arts, Ames, Iowa.

Toole, Marion, February, 1951, "Fishes of Texas, Texas Game and Fish," Pg. 20-23, Austin, Texas.

Twenty-eight bass caught by Jack Jimerson and P. G. Grambling, Jr., of Ruston, La., on Schinery Dam.

GRANDPAP TOLD ME . . .

(Continued from Page 9)

reverie and said, "A feller over t'other side of the ridge ketched a silver fox in his traps about four, five years ago. Is there many in Pennsylvania."

I told him that there were probably no native silvers in the state and that this one was likely an escape from a fox ranch. Then I explained that silver foxes were nothing more than a color phase or mutation of the red fox, and that two parent red foxes might have a mixed litter of reds and silvers. "But," I explained, "for some reason still unknown, these valuable mutants are born only in the northern part of North America, especially in Canada and Alaska. The same thing is true of our gray squirrel as you know. In the northern part of the state black squirrels are common, but they're scarce as hen's teeth in the southern half. Here again both blacks and grays may appear in the same litter. Along the New Jersey coast black muskrats may outnumber the common brown kind we know here in Pennsylvania, and even in the southeastern part of our state black muskrats are fairly common. And in southeastern Pennsylvania several skunks are taken by the trappers each year which instead of being black and white are lavendar-brown and white. I wish I could explain why this ocurs in one region and not in another, but that's just one of a great many things we don't know yet.

"Speaking of squirrels reminds me of the story that has been handed down from generation to generation concerning the tendency for red squirrels to emasculate gray squirrels. Many people claim that they have observed this misdeed on the part of the red squirrel, but apparently they have taken too much for granted. When a red squirrel is chasing a gray along the ground or along a limb, the

Jules Bischoff with a bag limit of 10 doves killed during the recent season on his farm near Eunice, La.

nearest part of the gray's anatomy, and the most convenient part to grab with its teeth, is the distended scrotum.

In hunting season I've had fellows show me male squirrels which they claimed had been emasculated by red squirrels. But these men did not stop to think that the testes are ordinnarily retained inside the abdominal cavity except during the mating season. For that reason most of the males, and especially the younger ones, would appear not to have testes during that time of year. These doubting Thomases should look inside before condemning the red squirrel too hard. There probably are cases where a badly torn scrotum has become infected and the gray squirrel rendered sterile indirectly. Chances are, though, this doesn't happen too often.

Grandpap was waiting for me to finish this time and immediately asked me if a doe deer could have a fawn when she was a year old. I told him about the work in New York State where they have examined hundreds of does killed during the fall hunting season and others killed by cars. These wildlife men found that, under the best of range conditions where the deer were well fed, about one-third would fawn the first year. These probably represented the older yearlings born during May and early June. Late June and July fawns would be less likely to breed during the first fall.

"Our black bear is the least precocious of all our native game animals," I continued, "for they may not breed until the third year, and then they ordinarily have cubs only every other year. A new-born cub is just about half the size of a newly-arrived porcupine. A 200 or 300 pound bear will have cubs weighting about 8 to 10 ounces each, while a 10 to 20 pound porcupine will give birth to a 16 ounce offspring. Not only that, but bear cubs are born in such a premature state that their eyes don't open for six weeks and it is another month before they can venture outside the den. On the other hand, the porky is born well furred, is able to protect itself with its spines almost immediately, and is ready to eat solid food within a couple of days.

"Perhaps the most interesting animal babies are the opossums. When first born an opossum is smaller than a honey bee and an entire litter of a dozen or more can be held on a common teaspoon. These tiny bits of naked flesh, which are really nothing more than prematurely born embryos, are able to climb hand-over-hand through the mother's fur, locate and enter the marsupial pouch, and attach themselves to the nipples. Each hangs on tightly to its nipple and doesn't let go for several weeks. Later, after they get to be the size of small rats, they may crawl out of the pouch and ride on the mother's back. It's an interesting sight to see an old 'possum with eight or ten babies hanging onto her back and tail waddling down a woods path.

"The opossum is only one of many animals which transports its young. Some bats for instance, may carry their three or four babies with them when they are hunting for insects on the wing at twilight. The tiny bats cling to their mother's fur with both tooth and claw. The remarkable part of this feat is that the combined weight of the four young may exceed that of the mother, and yet she can carry them and perform her usual intricate maneuvers in catching insects in the air.

"The sea otter is another. These rare and extremely valuable fur animals bear their young at sea in beds of kelp. They transport their offspring by swimming on their backs while clutching the tiny otters to their breasts.

Run and call a doctor, Junior—I'm going to give your father a penny for his thoughts?

"But the most truly amazing of all parental solicitude is exhibited by the emperor penguins. Since they spend their entire lives on the frozen wastes of the Antarctic where no trace of nest material is available to insulate an egg or offspring from the intense cold, these birds have evolved an unique method for incubating the eggs and brooding the young. Only one egg is laid, and this is held in a pouch-like fold in the skin of the lower abdomen by the feet and rudimentary wings. Thus, all incubation is accomplished standing up! Because an egg would freeze almost in seconds in the 50, 60 or 70° below zero cold, the penguins cannot leave it exposed when hunger drives them to feed.

What does she do? She passes her egg or newly-hatched young to another penguin which mothers it as if it were its own. In fact, both males and females, bachelors and all, help to keep the eggs and tiny penguins warm. So eager are they to assist that they may literally snatch one another's charges, and often eggs are broken or baby penguins injured in fights for possession. This parental instinct is so highly developed that some may be found holding round pieces of ice to their bellies in an effort to hatch them. One thing certain, it would be a wise mother who would know her own son after weeks of this shuffling.

"We have nothing which will compare with the penguin for cold weather mating, but our great horned owl doesn't seem to mind winter weather either. It is usually incubating its eggs in some abandoned crow's nest or old hollow snag as early as February, and the young owls are often in the nest for two or three weeks while snow is still on the ground. No wonder they speak of something as being 'tough as boiled owl,' for they'd have to be tough to sit out in the open during February and March."

I thought perhaps I could get away from Grandpap and the boy at this point and go on about my work, but this time the boy was ready with a question: "I saw a movie once where a deer out West killed a rattlesnake with his hooves. Do our deer kill them like that, too?"

"We did some experimenting on this subject just for our own satisfaction," I told him, "but when we finished we were more confused than ever. People claim that they have found dead rattlesnakes in the woods which were obviously trampled by a deer. Of course, unless they actually saw the performance they couldn't definitely say that the deer killed the snake because it could have been dead from some other cause before the deer worked it over. Anyway, we put rattlesnakes in the pens with our fawns, young bucks, old does, and even our old bucks which appeared to be afraid of neither man nor beast. A couple of these older bucks were 'bad ones' for they would charge and attempt to kill anyone who entered their pens.

"The result was always the same. The rattlesnake would be placed inside the gate of a pen and would usually lie quietly for a few seconds. The tame and curious deer would approach with no evidence of fear until suddenly they would smell the snake, or it would move and begin to rattle, and immediately the deer would jump into the air as if shot and dash wildly to the farthest corner of the pen. There it would stand, or trot nervously back and forth, all the while acting like it wanted to get all four feet off the ground. This lifting of the feet was accompanied by a squinting of the eyes as if some strong gas or other irritating substance was hurting its eyes. The 'bad' bucks would approach a man standing inside the gate with a rattler on a shovel with hair raised, ears laid back, and antlers lowered in preparation for the final charge, but one whiff of the rattler and all fight was gone. These big 250 pound bucks would 'toe dance' just as well as the smaller, less ferocious deer. So there you have it, do they or don't they?

"A lot of people think the age of a rattlesnake can be told by counting its rattles because they believe it adds a rattle each year. Actually, they add two to four a year, and average about three. Ordinarily, every time the skin is shed another rattle is exposed. These snakes are seldom found with more than ten or twelve rattles because the end three or four keep breaking off or wearing off as a result of the intense vibration. So the number of rattles they have means little if you are going to guess their age."

This time I managed to say "so long."

As I walked down the path toward the car, I glanced back toward Grandpap and the boy. Grandpap was looking at his grandson and slowly shaking his head. As I opened the gate I heard him say, "Well I'll be dad-burned!"

Courtesy Pennsylvania Game News.

SALT WATER FISHING . . .

(Continued from Page 5)

of recent years, and the anglers, who love to stand in water to their waist, have been growing to great numbers. Wherever there's a stretch of beach you may be sure now of finding the surf fishermen and women hauling in speckled trout, red fish, spanish mackerel and whatever else happens to swim by.

With all this amazing sport available to every man, woman and child, there is still another phase that adds to its attraction. You don't have to have a large tackle-box filled with expensive lures, special hooks, fancy rods and reels to participate. There's as much fishing with the old cane pole, plain, stout line and simple hook, as there is of the other kind, and strangely enough, the results are about the same. Fishing in Louisiana's 7,721 miles of coastal waters is NOT an expensive sport unless you make it so, and your chances for a record catch are as good with the simple gear as they are with the finest the sporting goods stores can offer.

A tree full of fish? Well, almost. It's Wade Delahoussaye of Church Point, La., with a catch of bass he and Cabby Delahoussaye and Spurdy Camel made in Miller's Lake. These 17 fish weighed 47 pounds.

In short, fishing in Louisiana is an outdoor recreation every one, rich or poor, can enjoy, and where else in the world can you find so much of it for so little effort and cost?

FEDERATION MEETING . . .

(Continued from Page 15)

to help make his restocking program a continued success.

Bud Jackson, field supervisor of the National Wildlife Federation and nationally prominent as an outdoor writer, was the featured speaker on Saturday afternoon. Seldom is it given to such an audience to be treated to so sincere, intelligent and at the same time so sparklingly brilliant a discourse on our nation's natural resource problems.

Other convention speakers included: Charles H. Jeter, Shreveport, president of the Louisiana Forestry Association; S. W. Nelken, Natchitoches, president of the Central Louisiana Association; Carroll Perkins of the Louisiana Department of Wildlife and Fisheries, who discussed the operation of game refuges under the Pittman-Robinson program (federal aid); Claude D. Kelley, Atmore, Ala., president of the national federation.

Nearly 200 sportsmen attended the principal sessions, and 125 attended the annual banquet Saturday night at which Clements was the speaker.

AD TOEPPERWEIN RETIRES AT 82

ADOLPH P. TOEPPERWEIN, aged 82, unchallenged holder of the greatest shooting record ever made at aerial targets, has retired after 50 years of professional exhibition shooting for Western-Winchester. In 76 years of shooting he never had a single shooting accident.

In company with his equally famous wife "Plinky" Toepperwein, who died in 1945, Toepperwein toured the country for half a century giving shooting exhibitions with rifles, shotguns, pistols, and revolvers which were so popular that schools and colleges frequently closed down to give their students an opportunity to witness the marksmanship of the famous Texas Triggerman.

Tall, quiet, and unassuming, he was the idol of youngsters from coast to coast. Although no accurate records were kept, it is estimated that in his lifetime Toepperwein fired accurately three million rounds of ammunition.

Son of a Texan frontier gunsmith, Toepperwein was born in 1869 at Boerne, Texas. Before he was ten he became a marksman with a crossbow, a 14-gauge shotgun and a .22 caliber rifle. By the time he was 21, he had become a cartoonist for the San Antonio Daily Express and had become a local celebrity as a sharpshooter. After several years in big time vaudeville performing a shooting act in B. F. Keith theatres, Toepperwein became chief exhibition shooter of the Winchester Repeating Arms Company of New Haven, Conn. In 1932 when Winchester was acquired by the Western Cartridge Company, Toepperwein continued as chief exhibition shooter for both Western and Winchester.

Toepperwein found his wife to be loading ammunition at Winchester. Elizabeth Servaty had never fired a gun until she met Toepperwein. Three weeks after he had begun her instruction in the use of a rifle, his wife had become so skillful that she was shooting chalk from between his fingers. This feat was later abandoned as a bad example to inexperienced shooters.

Under her husband's tutelage Mrs. Toepperwein became the greatest woman trapshooter of her time. Her greatest feat has never been equalled by either man or woman and consisted of breaking 1,952 out of 2,000 clay targets in 3 hours and 15 minutes of actual shooting time.

Mrs. Toepperwein was popularly known as "Plinky" from her habit of saying "Plink" when she pulled a trigger, and invented the word "Plinking" to describe the practise of shooting at random targets.

Toepperwein's last exhibitions with his wife were held during World War II in training camps in the South and Southwest.

FEED 'EM AND SAVE 'EM

By Henry P. Davis

WITH winter on the wane and spring still in the offing, this is the period of "bread lines" for wildlife in many areas of the country. The practice of feeding wildlife during critical periods of heavy snows and extreme cold has become well established in some sections and undoubtedly has saved a considerable portion of the breeding stock. These programs are particularly important when an icy crust prevents access to natural food supplies. Grain for winter feeding programs is expensive and continued emergencies strain the resources of sportsmen's organizations who are forced to operate on a limited budget. Many of these organizations are urging housekeepers to cooperate by saving scraps of bread and suet.

In addition to the uncertainty of supply, winter feeding programs are usually handicapped to some extent by the prevalence of predators. It does not take hungry predators long to discover that feeding stations provide banquets for them, too . . . in warm flesh and bone instead of grain. Wildlife management practices have made much progress in recent years, and it has become generally accepted that wildlife habitat improvement programs are of much greater, and far more lasting, value than emergency feeding activities. And usually they are less expensive.

In sections where the natural food is buried under a heavy blanket of ice-crusted snow for periods of considerable length, winter feeding programs are extremely important for well-fed game can survive great hardships. But carefully planned planting programs provide natural food when it is needed most and can mean the very survival of game in more areas than some realize.

The value of these habitat improvement programs is rapidly gaining recognition among the sportsmen's clubs. In a recent column, Raymond R. Camp, outdoor editor of the NEW YORK TIMES, wrote:

"One up-state club reports that it has been able to reduce some of its winter feeding activity as a result of active food-cover planting program initiated two years ago. The 80 members of this club interested more than 400 farmers in their general area, and, with two exceptions, were given permission to plant multiflora rose along fences and swales, as well as some wild grape, bittersweet and assorted shrubs.

" 'Part of the money we had gathered for a winter-feeding program was devoted to the purchase of these seeds, plants and cuttings and the planting work was done by four-man teams during the spring and summer,' the club secretary wrote. 'The multiflora rose took hold extremely well, survived last winter with very little loss, and is doing nicely this winter. Some of the farmers, after seeing the results of multiflora rose plantings, have written the club as to a source of this plant, as they wanted to carry out additional work at their own expense.'

"The conservation department of any state should be able to provide interested individuals, or groups, information as to a local source of multiflora rose seedlings. The plant provides excellent cover as well as food for upland game, and it has an excellent survival ratio in this climate."

4-H CLUBS PLAY PART IN WILDLIFE

CREATED 37 years ago as a means of educating the future farmers of the nation in sound agricultural methods and to give rural youth some of the cultural and social benefits enjoyed by his cousin in town, the 4-H Club movement has become one of the potent conservation forces in America, the Wildlife Management Institute reports.

The protection of soils, waters, forests, and wildlife plays an integral part in the program of the 4-H club. Under the supervision of the Agricultural Extension Service, the young people learn the most modern farming methods designed to hold the water and soil on the farm. Practically all of these practices benefit farm wildlife; any land-use practice which maintains soil fertility, which encourages the establishment of permanently vegetated areas, and which discourages soil erosion, nearly always results in more productive wildlife habitat.

Much of the emphasis on conservation in the 4-H Club movement may be traced directly to the personal interest and financial assistance given the program by Mr. Charles L. Horn of Minneapolis, Minnesota.

In 28 states, a total of 208,585 members are now engaged in direct wildlife management projects: planting shrubs, trees, food and cover patches; leaving grain for wildlife use during the winter months; building birdhouses and bird feeding stations; and protecting fencerows which formerly had been burned or cleared.

Many of these youths gained their wildlife management know-how at some 45 camps, financed by Mr. Horn. Scholarships are granted to 5000 deserving young men and women each year to enable them to attend these camps. In addition to these camps, 712 others present one or more courses by soil conservationists, wildlife technicians, and foresters.

More than 10 million boys and girls have participated in conservation projects on their home farms since Mr. Horn began his sponsorship of the conservation program 17 years ago. Many of them now occupy responsible positions in professional soil, water, forestry and wildlife management work.

SCIENCE ENLISTS THE BEACHCOMBER

Uncle Sam's long arm has reached out and tapped upon the shoulder that epitome of carefree existence, the beachcomber, the Wildlife Management Institute reports.

Time was, not many years past, when a can could pick some quiet key and forget all about bureaucracy, Washington, and the outside world. But no more. As the man "on the beach" roams the sands in search of the day's new stock of flotsam and jetsam, he may stumble upon a small plastic container holding a postcard which tells him: "These cards are being used to study the currents of the Gulf of Mexico. Please remove the pastic and fill in blank spaces. Mail every card you find. No postage needed in the United States. In return you will be told the place of their release."

Ivan F. "Buddy" Miller, aged 7, with a string of four sac-a-lait he caught in a lake near his home at Eunice, La.

OUTDOOR NOTES

By

Joe Austell Small

Here's proof that these three had a busy morning. Left to right are; Charlie Cason of Plain Dealing, La., G. H. Crabtree of Mansfield, La., and P. B. Crabtree of Plain Dealing, La., with a string of white perch caught in Lardo Lake below Jonesville.

THE EYES of a whale are set far back and look in opposite directions. They cannot be moved to look straight ahead or behind. If Mr. Heapbigfish wants to see what's on the horizon, he must stand up in the water and slowly turn around.

"Twilight Sleep"

Use of either had proved so effective in simplifying the work of fin-clipping trout that workers, as an experiment, applied the same practice while stripping eggs from rainbow trout. Almost a million eggs were taken from etherized trout in half the time usually required. In addition, the percentage of "delivered" eggs that "eyed up" nearly doubled.

The spawn-takers, who formerly had to tussle with slippery trout weighing up to 15 pounds, were enthusiastic boosters for "twilight sleep" for the finny expectant mothers.

Catfish Bait

If you're worried about the live bait situation, but are still catfish hungry, bend your good ear agin' the wind and listen:

Mix 1 cup of flour, 1 cup corn meal and 10 tablespoonsful of thick molasses. Mix into stiff dough and roll into bait balls. Drop into boiling water. Boil ten minutes. Remove and drop into cold water. This is a sweet-tooth catfish bait and it stays on the hook. Your skillet will smell fishy if you give this bait a good try.

For He Who Kicks

Audley C. Hawkins, of Lincoln, Illinois, was so disgusted when he reeled in a pair of old trousers that he gave the pants a scornful kick. He got a stab in the foot. A ten-inch catfish was inside the pants!

What's New, Doc?

This is the time of year when everybody comes out with bright, new catalogs on the latest developments in the sporting goods world. If you are interested in any of the subjects following, a card to the company given after listing will bring you full details on some rather unusual new developments in their particular line. Boat trailers: Mastercraft Trailers, Inc., 7 Factory St., Middletown, Conn. For some real news in development of fishing lines, write for "Successful Fishing" to B. F. Gladding & Co., Inc., Box 3451-B, South Otselic, N. Y. For hot dope on fly rods and fishing tackle in general, write both South Bend Bait Co., 920 High St., South Bend 23, Indiana, and Shakespeare Company, Dept. WS-2, Kalamazoo 2, Michigan. For dope on a new outboard motor cover-all, write Ft. Dodge Tent and Awning Co., Marine Division-WS, Ft. Dodge, Iowa. For details on a new, low-priced, hi-powered rifle write Tradewinds, Inc., P. O. Box 1191-W, Tacoma 1, Washington. And for the best dad-burned guide on binoculars that has been written in months, drop a card to Bushnell, Dept. WS-22, 43 E. Green, Pasadena 1, California, for the guide, "How to Select Binoculars." All of these catalogs and booklets are free, of course.

How T' Catcha Frog

Ever go fishing for frogs? By golly, it's sport—and frog legs in the skillet is your reward. A very small snelled hook, baited with a strip of red cloth or yarn, is a sure-fire frog-getter. Also, a small wriggly worm or a dragonfly will work beautifully. Just lower the bait in front of the frog and you'll have quick action. How to get that close to him? Well, you've got to have **something** to worry about, haven't you?

Strong Spider

It takes a 14-ounce pull to open a trapdoor spider's door when he's holding it down. If man were proportionately as strong, he could exert a pull of ten tons.

Seeing the Sights After Dark

When it is necessary to shoot in the dark, wet the top of your rifle barrel and the sights can then be seen more easily due to the moisture reflecting light of the moon and stars.

Camp Kinks

Before you leave camp, pour water on your campfire and cover it with dirt.

Butter, lard and other perishable foods can be kept a long time if sunk in a spring or stream in tightly closed mason jars.

To prevent coffee from boiling over on the campfire, lay a green twig across the top of the coffee pail.

Powdered milk and powdered coffee are light to pack and are easily and quickly made in camp.

Short Snorts

Snakes possess so many structural features suggesting structural features of birds that many scientists have treated birds and reptiles as a single group—the Sauropsida.

The well-informed sportsman says: "A bevy of quail; flight of doves; brood of grouse; covey of partridges; flock of geese; plump of ducks; stand of plover; and wisp of snipe."

Modern David

Pierre Perry, a former French boxer, went to Utah to hunt uranium. When the deer season opened up, he switched his Geiger counter for a rifle. But Pierre didn't have any luck.

So he switched the rifle for a sling-shot to bring down a chicken hawk. That's when a 165 lb .buck appeared. Pierre flipped a ball bearing into the sling-shot and let fly. The pellet caught the deer just below the temple. Pierre finished off the animal with his knife.

He was hunting at the time with Fred C. Clemore, of Marysvale, Utah. They both swear to the modern David feat.

One Tough Dove!

Maurice Castle, a reporter for the Press-Register in Mobile, Alabama, is the kind of gent that things happen to. He was dove hunting this past season with a group of friends in Escambia County, Alabama. When the day's hunting was over, the boys gathered to "pool" their birds for an even distribution. Castle was the last to empty his game onto the sizeable pile of birds the other hunters had bagged. Suddenly, one of his "dead" doves took wing and hit the skyward trail. Castle said some things that he wouldn't print in his own column, but his red face said even more. It could only happen to Castle, his friends say!

Monkeys Not So Dumb

Next time someone calls you a monkey, thank him! A monkey will not pull a banana from a tree until he intends to make use of it. On the other hand, humans have grain rotting in one place and bread lines standing in others.

Jumpy Bruin

No wonder the she bear is jumpy, irritable and afraid of her own shadow when she comes out of hibernation. It is probably nothing more than pure shock. Imagine, if you can, waking up some bright morning and being greeted by a couple of hungry heirs! It must be unnerving to say the least.

Mrs. Bruin goes to sleep in the fall a free woman. But in the dead of winter the bear stork pays her a visit. Cubs have a habit of catching mama napping.

Who would blame mother bruin for acting queerly upon waking from a long, restive sleep and finding two growing youngsters howling for attention!

Seasonal Tribes

Pueblo Indian tribes of New Mexico are usually divided into two groups known as Summer and Winter. It is called the dual system of organization. Every person in the village belongs to one of the two groups. Each group is ruled by a cacique, or town chief, whose word is absolute. Each cacique has charge of ceremonials during his respective season.

Sinks His Teeth Into It

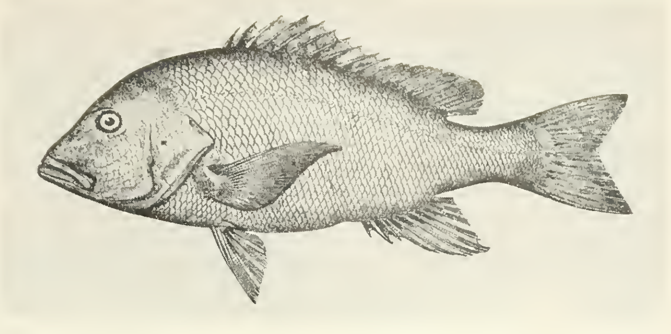
The walrus uses his large tusks to mow down or tear aside the great fields of seaweed among which he finds his shellfish prey. They also enable him to clamber up on blocks of ice and climb upon rocks and icebergs. Occasionally, they are used as weapons of defense.

Short Shorts

Raccoons are among the chief enemies of crows. The animals rob nests of the birds, eating both eggs and fledglings.

A bullet dropped from the hand and one fired from a rifle will hit the ground at the same instant, provided the bore of the rifle is held parallel to the ground when it is fired.

In most states the law forbids use of gold fish for bait. The primary reason for this is that gold fish are merely fancy carp. Once liberated they soon reach great size and revert to type. Thoughtless dumping of unused live bait into streams would unloose another depredator.



RED SNAPPER

By Homer Circle

THE SNAPPER family is a large and important one among salt water fishes. The largest and most important of the snappers is the red snapper, and it is as tasty as it is beautiful.

If any angler has a yen to get his fill of snapper fishing, all he has to do is pay the customary fee for accompanying a commercial boat leaving the Gulf ports for snapper reefs.

It will be a full day and you usually catch so many fish that you are filled "way up to here" for quite some time insofar as hauling in red snappers is concerned.

Other smaller members of the snapper family, all of which occasionally furnish good sport to the light tackle angler are: Dog Snapper, Lane Snapper, Mangrove Snapper, Mullet Snapper, Muttonfish Snapper, Schoolmaster Snapper and Yellowtail Snapper.

NAMES . . . Pensacola Red Snapper, Mexican Snapper, Snapper, Pargo Colorado and Acara Aya.

CHARACTERISTICS . . . Nature used a gaudy paint pot on the red snapper. The body is deep rosy-red, fins a deeper red with a pale yellow tint, and a jet black pupil rimmed in red tops off this colorful creation.

RANGE . . . Although occasional stragglers are found as far north as Long Island, the range of the red snapper is from Florida through the West Indies to Brazil. It is most plentiful in the Gulf of Mexico.

The red snapper schools around rocky banks, usually 90 to 300 feet in depth. When located the action is fast and furious.

SIZE . . . The average size is 5 to 10 pounds. Although no authentic record is listed, the largest known size is about 55 pounds.

FLAVOR . . . Excellent.

FOODS . . . Small fish, crabs, shrimp and other crustaceans.

LURES . . . Most red snappers are taken on cut bait in deep water, but they occasionally will strike spoons like the Ace, Queen or King, and plugs like the Vamp, Torpedo or Sea Runt.

METHODS . . . Still-fishing and very deep trolling.

TACKLE . . . Since most fishing is done with hand lines, the only recommendation here is to have a line sufficiently heavy for the job, together with an 8/0 hook baited with cut bait, and a heavy sinker.

The red snapper, because of its habitat, will never assume important proportions as a sport fish. However, it will hold its own against any fish on the table.

The long slender filaments of feathers are indifferent conductors of heat, but retain a considerable amount of air which resists the egress or ingress of internal or external heat, thus keeping birds comfortable in hot or cold weather.

The bearded vulture, or Lammergeyer, which is more like an eagle than vulture, is not classed as a bird of chase, but it does secure its food by knocking chamois, goats and other animals off the ledges of precipices on which they are standing.

The nostrils of the giraffe are heavily lined with stiff hairs as a protection against the great number of insects the animal disturbs when it browses in the branches of trees.

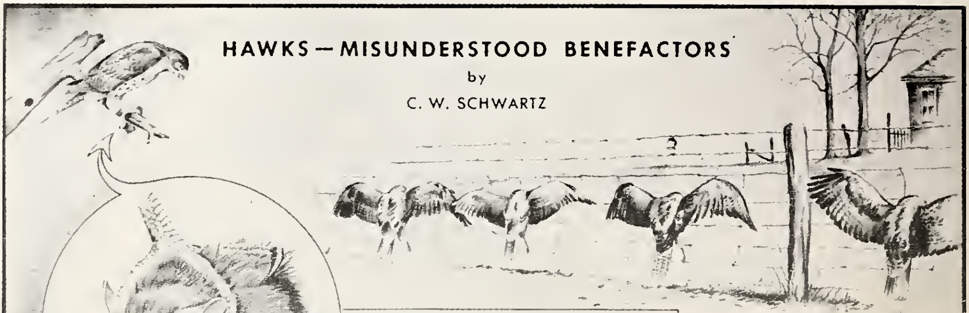
The wombat, called the Australian badger, has a pouch like a kangaroo, the internal anatomy of a beaver and the habits of a rodent. Natives say it can easily cross a river by walking on the bottom.

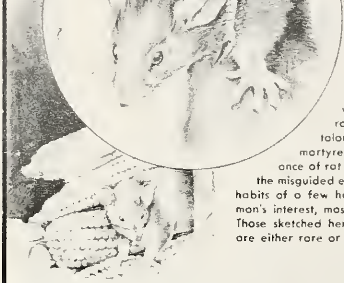
U. S. POSTAGE
2¢ PAID
PERMIT No. 74
NEW ORLEANS, LA.

HAWKS—MISUNDERSTOOD BENEFACTORS

by

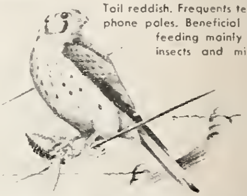
C. W. SCHWARTZ



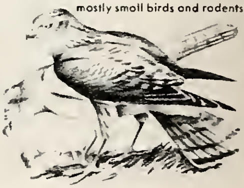


The above scene of red-tailed hawks strung on a wire fence by some enterprising individual is not an uncommon sight. Likewise, a red-tailed hawk (above left) busily feeding on some morsel of food is frequently observed. Both scenes deserve close scrutiny. The distant hawk on the dead snag, if viewed with binoculars, in most cases would be seen to have a rodent—usually a rat or mouse—clutched in its powerful talons. An examination of the stomach contents of the martyred hawks on the fence would also reveal a preponderance of rat and mouse remains and should provoke thought toward the misguided efforts and energy behind this exhibit. Although the food habits of a few hawk species classify them as of questionable value to man's interest, most hawks are assets to the former and the land alike. Those sketched here are some of our common species; others not shown are either rare or economically of less importance here.

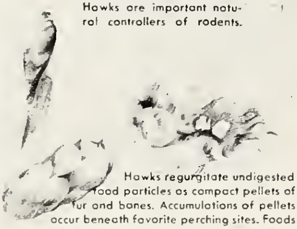
SPARROW HAWK. Small, about size of robin. Tail reddish. Frequents telephone poles. Beneficial by feeding mainly on insects and mice.



MARSH HAWK. Adult males gray, females and juveniles brown. White rump patch identifies species. Both beneficial and harmful. Takes mostly small birds and rodents.

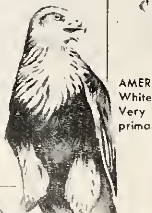


Domestic and field rodents cause tremendous destruction and economic loss. In the U. S. estimates of damage run above $500,000,000 annually. Hawks are important natural controllers of rodents.



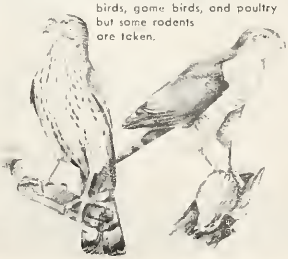
Hawks regurgitate undigested food particles as compact pellets of fur and bones. Accumulations of pellets occur beneath favorite perching sites. Foods can be learned by examining contents of pellets.

Hawks sometimes frequent farm premises because of rat and mouse abundance. Think twice before condemning the hawk.

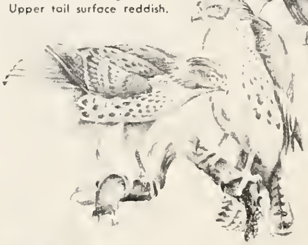


AMERICAN ROUGH-LEGGED HAWK (left). White tail has prominent black-banded tip. Very beneficial. Diet primarily rodents.

SHARP-SHINNED HAWK juvenile, (below left) and COOPER'S HAWK adult, (below right). These species closely resemble each other in juvenile and adult plumages. Both considered more harmful than beneficial. Diet consists largely of small birds, game birds, and poultry but some rodents are taken.

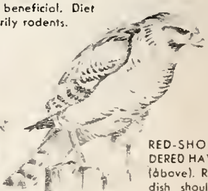


Adult (below). Large hawk. Upper tail surface reddish.

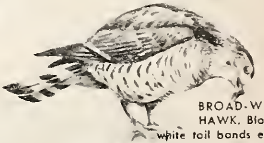


RED-TAILED HAWK. Eats mostly destructive rodents. Very beneficial.

Juvenile (above). Tail shows numerous light gray bands.



RED-SHOULDERED HAWK (above). Reddish shoulder patch, broad tail bands. Beneficial. Diet largely insects, rodents, frogs, and snakes.



BROAD-WINGED HAWK. Black and white tail bands equal in width. Beneficial. Insects, frogs, snakes, and rodents important foods.

—Courtesy of Missouri Conservationist